COMPUTERWORLD

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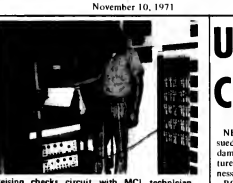
MCI's Dan Reising ties in Trans Union Wire. (CW Photos by Frank)



Reising checks circuit with MCI technician Norm Voight.

User Phil Erban checks incoming MCI line.

Lemay explains data to MCI's John Roush.

Trans Union First MCI User, To Reduce Data Bill by 40%

By Ronald A. Frank
Of the CW Staff

CHICAGO – Art Lemay switched on a modem and multiplexer here late last week and made communications history.

The 360/50 at Trans Union Systems Corp. was receiving data from St. Louis over a microwave circuit supplied by MCI Communications Inc. The circuit was the first ever installed by a specialized common carrier for a computer data user.

Art Lemay is vice-president and technical director at Trans Union Systems Corp., a credit and computer services firm which keeps records on more than 7 million consumers in the Chicago and St. Louis areas.

Lemay's DP operation can only be described as innovative. In addition to recently upgrading from a 360/40 to a Model 50, Trans Union had the first Fabri-Tek extended core memory for the 50 installed last June. Master credit files are stored on four 2321 data cells for a total storage of 1.6 Ghytes.

The Trans Union operations include 110 IBM 2260 CRTs and more than 100 TTYs. And Lemay's department processes more than 23,000 credit reports each day.

The MCI switch-over climaxed more than seven years of regulatory proceedings and intensive negotiations with established common carriers.

MCI first applied for an authorization to provide customized microwave services in 1963. In those days, when Bell and the other existing carriers enjoyed a virtual monopoly, MCI's filing for a route between Chicago and St. Louis was given only a slim chance to succeed by the regulatory odds-makers.

But last week a pioneering spirit was much in evidence as MCI and Trans Union technicians worked to establish the first circuit. Asked whether he

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User Sues RCA, Claims Value Lost

CW Staff Roundup

NEW YORK – RCA is being sued for $110 million for alleged damages arising from its departure from the computer business.

RCA confirmed last week that it had been served papers entered by Marketime Corp., a lessor of RCA computers and an RCA user by virtue of its service bureau operation. RCA had no immediate comment.

The complaint, which could lead to a test case for all RCA users, alleges, among other things, that the value of the RCA equipment owned by Marketime had been substantially reduced in value by the RCA decision to exit from the business, according to lawyers for National Computer Corp., of which Marketime is a subsidiary.

The action also charges that the RCA move has damaged the firm's present leasing business since it had contractual commitments with customers to maintain and expand their systems, the lawyers said.

Marketime also alleges that it has sent a "large quantity" of letters of intent to purchase RCA systems, that the letters have been approved by RCA, and that RCA doesn't appear likely to fulfill the tentative orders.

The main feature of the suit of interest to other RCA users is the part alleging that the RCA equipment has become essentially "worthless." If the claims can be proven, then all other RCA users may be able to seek damages from the firm for the same reason, legal sources indicated.

RCA has until Dec. 1 to answer the charges in the New York State Supreme Court, sources indicated. The suit seeks only damages against RCA and does not seek to bar the firm from selling the operation.

Legal sources close to Marketime said, however, that they could not tell whether the sale of the division would lead them to drop the suit or not.

"We have relied on RCA and its ability to perform," they said, and another firm might not give the same support that was expected or needed. So even if another firm were to take over the division, he said, the value of the equipment purchased from RCA might still be considered to have depreciated in value.

RCA's Sept. 17 announcement that it was withdrawing from the production and marketing of general purpose computers has aroused much ire, but this is apparently the first legal action arising from the withdrawal.

Univac Rumors

Meanwhile, rumors were growing dramatically that Univac would be taking over the RCA customer base. A number of RCA users have been told by

(Continued on Page 4)

Secret Study Revealed

FJCC Looks at DP Problems

By Edward J. Bride
Of the CW Staff

LAS VEGAS – Twenty-five years after precipitating the second industrial revolution, the computer community will take time to examine "Computers and the Quality of Life" during the Fall Joint Computer Conference Nov. 16-18.

The technical program will explore the use of computers in deterring war, controlling pollution, furthering medical and laboratory progress, and in other manners of improving the "quality of life."

Almost immediately after opening ceremonies, the results of a "secret" survey of the "public's attitude towards computer" will be revealed in a briefing open to the public.

Scheduled for 11 a.m. Tuesday at the International Hotel Convention Center, as opposed to the nearby Las Vegas Convention Center, where the other activities take place, the meeting is one of three special conferences which will feature public issues.

The national survey was conducted last summer through telephone interviews of 1,000 people, and was cosponsored by the publishers of *Time* magazine and the sponsors of the joint computer conferences, the American Federation of Information Processing Societies (Afips).

The results will be given "wide dissemination," Afips said, be-

(Continued on Page 4)

Tape Drive Faster Than 3420

LOUISVILLE, Colo. Storage Technology Corp. has announced a 360/370 compatible tape drive that operates at 250 in./sec, 25% faster than IBM's new, high performance 3420.

The drive, designated the ST3480, has a transfer rate of 400 kbyte/sec which is 80 kbyte/sec faster than the 3420. By comparison the IBM 2319 disk transfers data at 312 kbyte/sec. The 3480 operates with the STC 3800-III tape control unit which can intermix both 200- and 250 in./sec drives.

Burroughs has also announced a 250 in./sec drive, but it is designed for use on Burroughs CPUs and is not IBM compatible.

The STC drive is priced at $670/mo on a one-year lease. The 3420 Model 7 costs $650 on IBM's fixed term lease plans. On a two-year lease the STC drive is priced at $605/mo. The purchase price is $31,490.

The 3800-III controller is priced at $560/mo on a one-year lease or $24,100 purchase. Customer shipments of the 250 in./sec system are scheduled to begin in the second quarter of 1972.

The 3480 high-speed tape system is operating in-house, according to an STC spokesman and the 3480 will be shown in operation at the FJCC, he added.

Elections Support Vendor's Punch Card Vote Defense

By a CW Staff Writer

DALLAS – Punched card voting devices have been defended by one of the largest vendors of this equipment, in the wake of criticism by the Association for Computing Machinery.

Last week's municipal and state elections across the country appear to have supported the defense of these devices, despite ACM claims that "design inadequacies" caused many of the mispunches in last year's Detroit elections.

Thomas Schoen, president of Datamedia Computer Services here, said the machines were "not out of specifications," and fewer than one-third of one percent were found to be defective.

Twenty-one of over 6,000 devices were defective, but only about half of those were used in Detroit, he said.

These 10 units could not have caused the loose chad problem in Detroit, he added. ACM had claimed that loose templates or devices manufactured out of specifications had permitted styli to be inserted at an angle, thereby causing loose chad.

The extra hole in the M-20 position had in some instances been made by a standard round-hole punch, and not by the square voting stylus, Schoen noted.

In Flint, Mich., last week, the election went off without a hitch, according to a city official.

Officials of Benton County, Mich., and Sacramento, Calif., also reported smooth punched card elections, with "voter education" solving the loose chad problems.

In Benton County, sample machines were placed in supermarkets for try-outs, and election workers demonstrated the devices for inexperienced voters.

The older voters appeared most enthusiastic about the simplicity of the punch cards, an official observed. Benton County made the transition from paper to cards.

The chief problems appear to occur in larger cities, compounded by the huge volume of paper, Schoen said.

First MCI User Tied In

(Continued from Page 1)

had any misgivings about being the first MCI user, Lemay seem surprised.

"My main concern is with our DP operation," he said, "and that is a full time job. So when MCI offered us a turnkey communications capability we decided that they had something that was not available elsewhere." He added that initially he would operate with both MCI and Bell lines to have a back-up capability.

Although both Trans Union and MCI played down the cost savings as being secondary to the flexibility of service, the numbers tell a significant story.

Trans Union now uses two Bell private lines between Chicago and St. Louis. For full-duplex operation with conditioning they each cost $602/mo. In addition, Trans Union allocates $150/mo for each of two IBM 4872 modems which are required on the link.

With MCI service Lemay will pay $580/mo. This includes a Milgo 4,800 bit/sec modem and a Timeplex MC-70 multiplexer supplied, installed and maintained by MCI.

Lemay's bill with Bell for two channels and the modems came to $1,504/mo. With MCI he will get 10 teletypewriter channels plus a 2,400 bit/sec channel using the multiplexer, or 10 times the Bell capacity at a savings of more than 40% per month.

Trans Union will use the MCI facility for its credit verification operation. In St. Louis, local banks, stores and other loan granting organizations check consumer credit reports with the Trans Union local office.

When information is required from the Trans Union master file stored on four 2321 Data Cells in Chicago, an operator types in a request using an IBM 2260 CRT terminal. The request is transmitted directly into the 360/50 via the MCI link, and the required credit report is printed out on the CRT screen in St. Louis in a matter of minutes.

Trans Union and other users of MCI will not officially be billed for their communications services until December 1.

Although MCI has signed agreements for local loops (analog connections from customer premises to MCI's facility) with both Illinois Bell and Southwestern Bell, a regulatory technicality must still be overcome.

On Nov. 29, the Illinois Commerce Commission has to rule on the Chicago area agreement. MCI President John Goeken was optimistic about receiving clearance.

"Once the state regulators see the user demand for our services, it will be difficult for them to delay approval of our agreement with Illinois Bell," Goeken said.

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Would Serve 20 Million People

National Time-Sharing Network Predicted by Expert

By a CW Staff Writer

NEW YORK – One of the leading lights of time-sharing has predicted the coming of a single national computing network, based on a handful of regional centers, serving 20 million people a day. Dartmouth College President John G. Kemeny said that if the computer is well used, it could change the fundamental character of American cities in 20 years.

A co-developer of the Dartmouth Time-Sharing System and the Basic language, Kemeny explained his predictions in three lectures at the American Museum of Natural History here.

According to Kemeny, "if libraries are the storehouses of information, the computer is the storehouse of ways of doing things," and that by 1990, "the capability we now have at Dartmouth could exist for any home in the U.S."

This widespread availability of computer power could make "the role of the cities in the future . . . centers of information" rather than centers for people to execute paper transactions, Kemeny said. "The preparation of lengthy reports, collection and storage of data files, exchanges of messages and other routine office duties would be handled by people working with computers."

"It is safe to predict that we've already seen most of the increases in the speed of computers," Kemeny said. "The major areas of change will be in computer memories and communication. Memories of computers will become vastly better than they are now and a computer communications system will be developed that will not only be bigger, but national in scope."

Breakthrough

The college president said that in his view "the biggest breakthrough will come when we build our first large nationwide computer network."

The main thrust of future computer development should be toward big time-sharing systems, he stressed, not the minicomputer networks, as useful as they may be.

As a member of the National Committee on Libraries and Information Science, Kemeny has already called for a national computerized reference library system as the only way to cope with the knowledge explosion.

It is imperative to develop inexpensive terminals for individual users of a national computer network," he added.

"I feel that unless we human beings go out of our way to discard the advantages of computer power, computers could go a long way to open a new golden age for all mankind," he concluded.

Computerized Concordance Key to Bible Translation

SANTA ANA, Calif. – Computers are playing a key role in translating the Bible into some of the world's least known languages, many of which have never been put in writing before.

Translating the Bible, into often almost undecipherable dialects is the work of the Wycliff Bible Translators, Inc., which is headquartered here. According to Gerald Wheeler of the headquarters staff, Wycliff's primary vocation is translating the New Testament for people who want to read about it in their own tongue.

While the organization uses a minicomputer at its Mexico City facility for text editing and preparing tape for typesetting, it is the other tasks the computers perform – in the area of linguistics – that have proved a boon to translators.

By far the biggest assistance rendered by computers is to provide a concordance, or an alphabetical index of the principal words in a language with their immediate contexts. Since the Bible is to be translated into a language which may never have been written, the concordance consists of translations of tape recordings.

The computers also help derive the statistics of a language, combine series of letters that form words for later compilation into a dictionary, and sort and print dictionaries.

Kaje Language

Dr. Norris McKinney and his wife Carol spent last summer collecting data on the Kaje language of Nigeria, one that had never been written, although it is spoken by approximately 35,000 persons. It is one of 200 to 300 unwritten languages in Nigeria and was chosen, according to Dr. McKinney, because of the number of people who speak it.

Once the doctor has reduced the language to writing, he estimates that it could take as long as four years to completely translate the New Testament into Kaje.

Under a National Science Foundation grant, Dr. McKinney had access to the computer at the University of Oklahoma. This computer provided the concordance for the doctor's work, printing out single letters and noting their occurence in page after page of data.

According to Dr. McKinney this greatly simplifies the study of grammar and grammatical structures. "You learn where words come in a sentence, how often various morphemes occur, and how letters are combined," he said. "From this, we can prepare primers to teach the language and derive methods of translating English writings into Kaje."

Wheeler estimates that use of the computer to manipulate linguistic data saves translators about six months in an average project.

While the bulk of Dr. McKinney's work has been done on the computer at the University of Oklahoma, he has used systems in Nigeria. "We did some work combining letters into words and then asking someone fluent in Kaje if the words meant anything," he explained. "If they did our assistant was supposed to write down the meaning. That way we could develop a dictionary."

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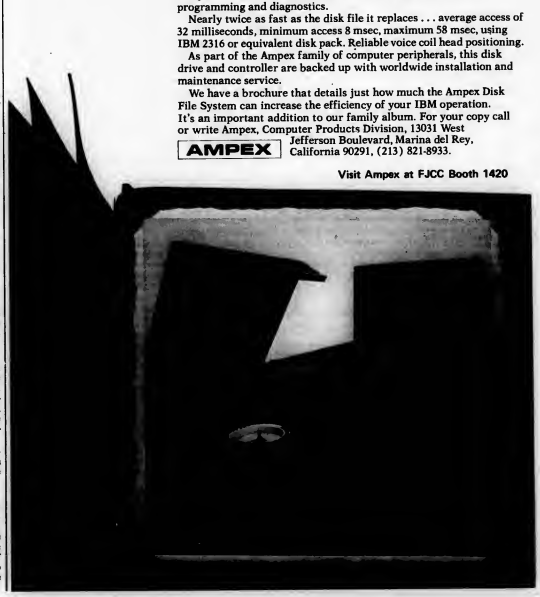

Las Vegas Conferees Explore Solutions

(Continued from Page 1)

cause of the increasing impact computers have on the public. Copies of the full survey will be distributed.

Included in the survey were questions regarding public contact with computers (through employment), billing problems experienced, the role, image, and impact of computers, and attitudes towards data banks and threats to privacy.

The briefing will be conducted by Clark Schiller, director of research at *Time*, and Bruce Gilchrist, executive director of Afips.

Questions and comments will then be directed to Schiller, Gilchrist, Afips President Keith Uncapher, and Afips Director of Public Information Tom White.

Between 20,000 and 25,000 computer professionals are expected to attend next week's conference, Afips has indicated.

The theme is a continuation of a concern first exhibited by the computer community during the 1970 conference of the Association for Computing Machinery (ACM) when ACM's motto "decade of dialogue" was first used.

FJCC planners said the two other public sessions would take place Tuesday afternoon.

The "problems of society" session will focus not on social problems generated by computers, Kelly said, but rather on applying computers to the "great problems that plague the human species."

"It may turn out that computers have arrived on the social scene barely in time to help save man from his own folly," one official noted.

The other public session will explore community information utilities, and is based on the theme that society is neglecting the "unparalleled opportunity" to spread computer science and technology to all of mankind.

The rest of the technical sessions will be open only to full registrants who will pay $60, or $30 if they are members of any of the Afips constituent societies. Exhibit-only registration costs $10.

The 26 sessions in the technical program include four double-length meetings on biology, programming languages, interactive computing, and laboratory automation.

A Wednesday afternoon panel will assemble some of the participants from the first joint computer conference, 20 years ago. These pioneers will reminisce on what they foresaw as technological possibilities, and relate the surprises and disappointments they experienced over the years, Afips said.

Over half the technical sessions will include panel discussions of the formal papers, with the academic and user communities well represented.

In the exhibit hall, about 200 companies will display products most of which are intended for original equipment manufacturers [see related stories, pages 23, 47].

Among the special activities planned for FJCC'71 will be the Science Theater, with films "relevant to the conference theme," including several films never before viewed, Afips said.

The films will be shown at noon and after the conclusion of the Tuesday and Wednesday afternoon technical sessions.

Several computer societies will be holding regular or special meetings in conjunction with FJCC, including Afips' senior member, ACM. One of the ACM subgroups will be holding a security "seminar" which is also open to the public.

The Special Interest Group on Computer Systems Installation Management will meet Monday at 8 p.m. in the Sahara Motel. The security session will be conducted by Mrs. Susan Kolasa, director of the campus computer facility at Stanford University.

A comprehensive ladies program has also been planned.

The youthful Radically Emphatic Students interested in Science, Technology, and Other Research Studies (Resistors) headquartered in Princeton, N.J., announced they are restricting their activities to spring points, and will hold a pre-college technical session in Atlantic City next spring.

Computer People for Peace (CPP) has not been heard from since the group's unsuccessful efforts to become a significant portion of last Spring Joint Computer Conference.

Dr. Arthur G. Anderson, vice-president and director of technical assessment for IBM, will keynote the conference at 9 a.m. Tuesday, and Dr. Frank Ryan, former professional football player and currently director of operation Transit for the U.S. House of Representatives, will speak to the luncheon crowd.

The keynote address is open to the public, but the luncheon costs $7. A Tuesday evening conference reception will cost $3.

Visitors can expect mild, pleasant days here, with average temperatures near 60-degrees, Afips said. Evening temperatures often drop into the low 40s, and the "strip" hotels are widely separated, making it necessary to use a shuttle bus service or other transportation between most hotels and the convention area.

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Customer Sues RCA for Lost Value

(Continued from Page 1)

Univac salesmen to stand by for an announcement.

Univac issued a "no comment" response when asked about the situation, but did not deny the possibility. RCA also refused to confirm the situation.

As of last Thursday, though, there was a suspicious amount of activity at high corporate levels in Univac board meeting, meetings of upper level RCA management, and a high level meeting at Burroughs, rumored to be bidding for RCA's Systems and Programming Department and the unreleased NTS-500 computer.

The rumors of purchase by Univac began a few weeks ago, and have arisen repeatedly in several parts of the country: Atlanta, Philadelphia, New York, Springfield, Mass., and Buffalo, N.Y.

Reaction to San Francisco

Notification of the resolutions made at the CUA meeting was sent to RCA late last week, and the company has not yet officially responded.

CUA special interest groups will also file position papers on their areas of concern within the next week or two.

The users, of course, are waiting to see if RCA will go along with the CUA recommendations, or if they will indeed have to fight the recertification process.

Good Decision

For the most part, users felt the middle-of-the-road course the CUA chose was a reasonable decision. Some, though, said they wished the CUA had taken a stronger position, and made moves to assure its own continuity in the event RCA stops supporting the organization.

Any firm decisions by CUA were being delayed for management evaluation, RCA's reaction, or possible changes in the situation due to purchase of the business. The overall mood was patience and waiting.

Never Lie to a Computer

CHICAGO — A couple matched by a computer four years ago were recently divorced. Joan and John Kolon each claimed the other caused the mismatch by lying to the computer.

News Wrapup

Rail Group Studies DP Use

WASHINGTON, D.C. — A national computerized rail car information and control system is being studied by the Association of American Railroads.

A special task force headed by Richard P. deCamara has begun the study, he told a meeting of the Transportation Data Coordinating Committee here.

Sen. Vance Hartke (D-Ind.) said such a system could alleviate the railroad car shortage, and he encouraged the railroad industry to hasten the development of the computerized system, rather than have it developed by the government.

DP Tax Register Adds to Privacy Fears

ROME — A computerized tax register is giving tax-evading Italians another reason to distrust the country's decennial census. The 20-page questionnaire had already aroused citizens' ire and prompted cries of "invasion of privacy," and the creation of a computer tax register only increased suspicion of the dossiers. Tax evasion is wide-spread in Italy, and the census asks detailed questions about life style, education, and profession.

The Italian Finance Ministry assured citizens that the census would be used "for statistical purposes only" and that there would be no cross checking between census and tax returns.

Exam Takers Await Grades From DPMA

PARK RIDGE, Ill. — The 601 participants in this year's Registered Business Programmer Exam have had their tests scored, but the Data Processing Management Association (DPMA) has not assigned the "cutoff" score for passing grades yet.

Last year, almost 40% of the 1,114 applicants passed, but it is not known whether the sharp decline in 1971 applicants will affect the cutoff grade.

Manchester University Installing CDC 7600

MANCHESTER, England — Manchester University is going to have one fine computer center in a short while, when its ICL 1906A is linked with a new CDC 7600. The Control Data number cruncher has been delivered to ICL, where software for the lash-up is being written. The 1906A will front-end the 7600, taking care of communications and file handling chores.

The twin installation will be the center linking universities at Keele, Lancaster, Liverpool, and Salford with Manchester. The special software and hardware for the system is being developed jointly by ICL, CDC, and the university.

When Is A.A. Freeman Not A.A. Freeman?

ROCHESTER, Minn. — Angelo A. Freeman is employed by the Standard Oil Co. in Chicago, and a few months ago he signed up for the payroll savings plan to buy $150 of savings bonds a month. The money was deducted, but Angelo never got the bonds.

Almerson A. Freeman, a retired Standard employee who lives in Rochester, last February began receiving $150 of savings bonds a month. The culprit who couldn't tell one A.A. Freeman from another? A Standard Oil computer, of course.

George Williams of Standard explained it was a "one-in-a-million chance," an incorrectly keyed social security number combined with the same names.

Angelo Freeman now has his bonds, and Almerson Freeman no longer has his windfall.

DP Critic, Called 'Jonah,' Was Right

LONDON — At a tribunal inquiry into the collapse of the Vehicle and General Insurance Co., the assistant general manager said he had been treated "as a Jonah" by his supervisors when he voiced suspicions about problems in the firm's DP record system.

In his testimony, John Medany told how policy adjustments were rejected by the computer, which said it had no record of the policy, but when corrections were made, the computer would have found the policy and rejected the correction instruction.

Reds Discuss Sending Programs Into Space

BYURAKAN, USSR – Proposals for sending computer programs and television pictures of computer circuits into outer space in efforts to communicate with extraterrestrial civilizations were discussed at a recent international symposium of scientists, according to Tass, the Soviet news agency.

American scientists described the U.S. "Cyclops" program to explore microwave bands for signs of communications from outer space. A Soviet scientist suggested that distant civilizations may be sending powerful but extremely short emissions into space. "We may be looking at the book without knowing the language" of interplanetary communications, he said.

Computer Nabs Meter-Feeding Arson Suspect

DENVER, Colo. – A city ordinance against Good Samaritans resulted in the arrest of a wanted person in a nearby city, thanks to the computer.

A young man was arrested for inserting coins into other people's parking meters, violating a city ordinance against "meter feeding for the goodness of mankind."

A check with the FBI's National Crime Information Center revealed that the man was wanted in a nearby state for conspiracy to commit arson, unlawful possession of dynamite, theft and burglary.

Wanted: Two Middle Names

Driver Wins Battle With DP Unit

WEST PALM BEACH, Fla. – A bettle by Herbert John Thomas Wilson to get the Florida Department of Motor Vehicles to use his two middle names on his driver's license appears over despite the fact that the license issued him has but one middle name.

The department has given in and agreed to make e change if Wilson will request it.

Wilson, an insurance salesman, declered war on the Motor Vehicle Department after he received e computer-prepared license renewal statement last September that made no mention of his second middle name.

His letter to the department resulted in a referral to his local highway patrol office where he was told any reference to his second middle name was out of the question.

"I was told it would be easier for me to change my name to conform with the computer rether than the other way around," Wilson said. Showing computer-prepered utility bills and gasoline credit card charges addressed to Herbert John Thomas Wilson made no difference, Wilson said.

But, to the rescue came Maxine Sapp, computer operations manager for the department. She admitted a mistake had been made and pointed out the computer could handle one of Wilson's middle names and the first initial of the other or the first initials of both middle names.

The mistake was made by one of the girls in keypunching Wilson's renewal card, she said. The name on the notice should have read Herbert John T. Wilson, and he could request such a correction.

He will settle for one middle name end the first initial of the second.

"I know it may sound weird to have two middle names, but my mother had two brothers and did not went to slight either of them," he explained.

Wilson said he frequently uses his driver's license to verify the name on the credit card he uses and "some people will not honor a credit card if the name is different from the one on the driver's license," he stated.

Professor Views Soviet DP

SEATTLE, Wash. – Prof. Helmut Golde recently shared his impressions of computing in the Soviet Union with a large audience at a University of Washington Computer Science Colloquium.

Golde, a member of the university computer science faculty, attended a fall meeting of the Algol working group in Novosibirsk, Siberia.

A large Soviet research center, Akademgorodok, is located in an "academic city" suburb of Novosibirsk.

One afternoon of the meeting was devoted to a tour of the computer center, including a presentation of the organization of the computer science institute. The center has two large (IBM 7094-class) BESM-6 computers, with a third on order. A trio of slower M220 s, tied to a data concentrator Minsk 22, serves as a timesharing system.

The timesharing system is expected to graduate to the larger BESM-6 s when the third machine arrives, the Russian hosts said; they hope to support up to 150 terminals at that time.

The institute employs approximately 300 scientists, 100 of whom have doctorates, and is doing research in theory of programming, problem-oriented languages and packages, programming systems (including the development of a programming system for Algol 68, PL/1 and Simula 67), operating systems, scientific and business data processing.

Purchase Credits Help University Upgrade DP Unit

BOWLING GREEN, Ohio – Bowling Green State University is getting an IBM 360/75 for the same rent it was paying for a 360/50 by using purchase credits within the state university system that would otherwise have gone to waste.

The move has saved the state about $1 million, according to Bowling Green's DP director, Robert T. Duquet.

The 75 was formerly installed at Ohio State University, where it was leased. OSU is converting to e 370/165 because of demend for computer time, and Bowling Green is getting the 75.

Because IBM considers the state university es one account, Bowling Green has been eble to capitalize on OSU's purchase credits, Duquet said.

Bowling Green has teken a five-year lease/purchase contract on the 75 and is also utilizing educational allowances of 20% to 30% on parts of the system.

The 75 will be the heart of a regionel date processing center for northwestern Ohio universities, including the University of Toledo.

IBM had downgraded the 75 from 1 Mbyte to 256K. Duquet said he thought this was the first time IBM hed agreed to do this.

Bowling Green would like more core, though, so it is working with the University of Cincinnati to get it. Cincinnati will be upgrading its 360/65 soon, and Bowling Green hopes to move the 65's core onto the 75, using the same tectic of applying unused purchase credits.

A state-supported regional center was never funded by the Ohio legislature. Duquet said the university system's solution was to operete without the subsidy, by using purchase credits, state and local discounts, and by cooperating with each other.

Computer Analyzes Witches 'Brews'

DALLAS, Texas – The "mysterious" remedies of witch doctors in the back country of Jamaica mey no longer be mysterious, es a doctoral student at Southern Methodist University is using a computer to enelyze the drugs and techniques used by the "balmists."

Joseph Long spent 15 months observing the witch doctors, and expects the analysis to indicate if the prescribed drugs, or how they are used, have genuine medical applications.

One drug used by them, "fowl blood weed," is being studied at the Univerelty of the West Indies in Kingston for its possible effect in treating esthma, Long noted.

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'Grand Theft' of Program

Ward's Trial Tests Trade Secret Law

Special to Computerworld

OAKLAND, Calif. – A four-year old trade secret law will be tested in court later this month, when Hugh Jeffrey Ward goes on trial for allegedly stealing a proprietary plotting program.

Testimony will apparently revolve around the issue of whether the plotting program was really a secret, and not whether programmer Ward committed the alleged theft.

The program was allegedly stolen by remote access to a computer at Information Systems Design (ISD) here. Defense attorneys for Ward claimed ISD's publication of the program's code name removed its proprietary nature and placed it in the public domain.

Program in Public Domain?

Dr. Ned Chapin, speaking as a computer industry expert in preliminary testimony, indicated the program may have been in the public domain.

Preliminary testimony lasted several months, with Assistant District Attorney Richard Haugner stating the "extensive" examination was conducted because the case will be a test of the California law on trade secrets.

Chapin said he had examined some of the printouts confiscated in a search of Ward's office at University Computing Corp. (UCC) in Palo Alto. One of these printouts was identical in content to one provided by ISD for the allegedly stolen program, he said.

UCC is not named in the criminal action, although the company is a co-defendant in a civil suit which is moving slowly, pending outcome of the criminal trial, sources have reported.

Judge William R. Levins sent the case to Superior Court for trial on grand theft charges, releasing Ward on his own recognizance. Trial date is tentatively set for Nov. 22.

According to preliminary statements, a remote terminal at UCC was used to access ISD's computer.

A customer of both service bureaus had the same identification code, and it was alleged that the unauthorized use of the code enabled Ward to "call" the ISD computer.

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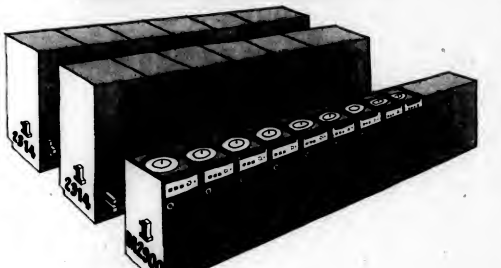

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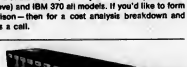

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Nationwide Bank Net Proceeds on Schedule, Below Budgeted Cost

MONTREAL, Que. – The development of the Bank of Montreal's nationwide computer network, said to represent the largest equipment order ever received by the IBM World Trade Corp., is proceeding on schedule and at less than budgeted costs.

Completion of the project will link all the bank's 1,100 branches, and could lead to the design of new hardware and software.

When completed, the system will handle virtually all banking transactions for the Bank of Montreal. The $9 billion institution, the third largest in Canada, has branches from coast to coast.

The system should optimize total bank resources, make operations more economical and facilitate customer services, according to R.A. McDougall, the bank's vice-president of organization, research and systems.

It is expected to be operational by the end of 1974, and was announced in November, 1969.

McDougall dismissed conjecture that development costs had increased drastically – 20% to 100% – by stating that costs are actually 30% below those budgeted for Fiscal 1971.

Added to savings in the project's first two years, the budget cushion is calculated "in seven figures." Cost of the system has been a tightly kept secret but estimates outside the bank point to a figure of around $50 million.

McDougall said collaboration between the bank and IBM will result in the design of new hardware and software.

"The geography and the number of transactions, which reach millions daily, require us to have an economical and high-speed communications capability," he said.

The system will be built around 370 series processors and will use some standard IBM equipment.

Advance planning concerning every step in the development has been responsible for the success of the project to date. It is now in the third of four phases – detailed design. The first terminal will probably be installed early next year.

Even within the bank, only a handful of people are aware of all details. Most project teams work in isolation, but the bank does consult with outside computer users, such as British banks and the National Aeronautics and Space Administration's Apollo project leaders.

"The outside expertise has proven most useful," McDougall stated. "It is extremely helpful to have an outside view, an objective critique."

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Roger V. Resek
Manager, Systems and Data Processing

RVR:lt

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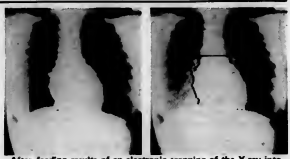
Digitizing Heart Is Key To Diagnosis

COLUMBIA, Mo. – A fully automated radiological diagnosis system has been demonstrated to perform as well as or better than trained radiologists using traditional techniques.

In a technical paper by researchers at the University of Missouri Medical Center and College of Engineering here, the computer-based system's diagnostic accuracy was reported to be 73% compared with 62% for a 10-member panel of experienced radiologists – one of whom was the principal research investigator, himself.

Dr. Gwilym Lodwick, professor and head of the Center's radiology department, said: "Our team is in the tenth year of its studies into techniques of automating diagnosis. We have used an electronic scanner, a computer and a series of complex computer programs to analyze chest X-rays, and to prepare statements of heart abnormalities and their probable causes.



After feeding results of an electronic scanning of the X-ray into a computer, Researchers at the University of Missouri Medical Center and College of Engineering programmed the computer to define an area for enhancement (left photo) and precisely trace the outline of the heart (right photograph). Analyzing the slope and length of the lines mathematically gave the computer hints as to the presence or absence of rheumatic heart disease.

He said both the automated system and the panel of 10 doctors correctly diagnosed heart abnormalities 94% of the time. The computer correctly diagnosed normal hearts as normal 89% of the time and the panel, 83%.

Computer More Accurate

"Overall accuracy," Dr. Lodwick said, "in diagnosing 135 cases was 73% for the computer-based system and 62% for the panel of which I was a member.

"What is more, the scanner had only the frontal view of each case, whereas we panelists had both front and side views."

Each physician examined some or all of the 135 cases, with a total of 639 radiologist diagnoses available for comparison with the automated system.

Dr. Lodwick and his associates are working on advancing the diagnosis techniques beyond heart ailments, the first phase. Respiratory, digestive and bone tumor routines are under development.

"It is conceivable that a series of scanners could be spotted around rural areas, for example, and general practitioners could enter their X-rays for computer processing. In effect, the best consultation in the state would be available around the clock throughout Missouri."

The automated system examines X-ray images, compares the image with known standards to determine the presence or absence of abnormalities and prepares a list of probable causes in order of probability.

As in traditional radiological practice, the X-ray is taken and developed onto 14- by 17-in. film.

The image then is placed in an electronic scanner which can examine up to 1,024 spots along as many as 1,024 lines from top to bottom.

Readings are recorded on magnetic tape which is fed into the College of Engineering's 360/50.

The computer processes the data into a mathematical two-dimensional array. It enhances areas for further examination and ignores those which are found to be normal or irrelevant to the type of inquiry being made.

The computer automatically extracts key features found in the enhanced areas, processes the extracted features and compares its findings with a decision-making format developed by Dr. Lodwick and his research associates.

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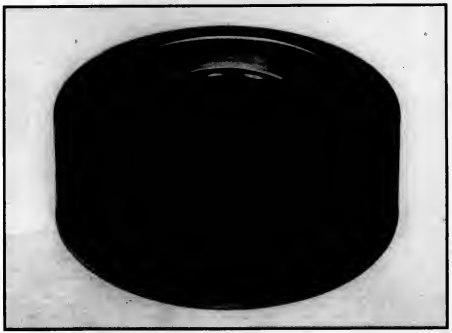

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Editorial

Price/Peformance vs. Speed

Despite the recession, some users apparently are still thinking in terms of "speed at any cost."

Yet how often must a record be retrieved in less than a few seconds – yes, *seconds* – to avoid causing costly delays?

In a multiprogrammed environment, the CPU doesn't wait around for a retrieval to be completed.

And even in many interactive environments, a few seconds is almost unnoticeable to a terminal operator, especially if the operator is doing other tasks while waiting for the reply.

Obviously, some applications require retrieval in milliseconds or less. But it seems to us that users, especially those with very large data bases, are often too quick to overlook the new, relatively slow, mass storage devices that are becoming available.

The question should not be "how fast is it?" but "will it do the job satisfactorily for the least cost?"

'And These Are Its Universal Dialects'

Letters to the Editor

Will the Real Bottleneck Of Data Input Stand Up?

We agree with your editorial, "Once is Enough" [CW, Oct. 20]. Source data is too often duplicated in the process of data conversion and people should not be confined to such mundane jobs as just writing it down.

Such precision devices as the Model 2600 Wright Punch have been helping a vast number of users capture "on-site" information since 1964. Most people can use it effectively in a few minutes, and in addition, the machine can be set up to reduce errors to a negligible level.

In my many contacts with computer users, too often DP and systems managers were "scared" to utilize source data recording and inexperienced people to speed computer input and help break the keypunch bottleneck. They block their minds to this technique by rationalizing that the "error rate" would be prohibitive.

Too often company unions negated valuable improvements in data recording using devices as portable card punches by saying that such duties were not in their contracts or that the employee should be paid a higher rate for this additional requirement and skill.

Too often management devotes all of its time looking at closing the gap between keypunching and computer processing (key-to-tape or disk). What about the gap between source and data preparation? Will the real bottleneck please stand up!

Why not pay employees who operate such portable devices at the source more for this time-saving skill, and upgrade many repetitious jobs by adding some responsibility to the position?

Why shouldn't a clerk be made responsible for the validity, correctness, and preparation of small amounts of variable data keyed into a prepunched card? Certainly the use of such devices would take the burden off keypunching during peak load periods.

How many companies could reduce the number of full size key punches standing idle during non-peak load periods? Couldn't some keypunch operations switch to verifying stations (056s) to interpret the data added to prepunched cards?

Wouldn't some of the savings in fixed keypunch department expenditures offer funds for paying source data recorders for this new important function?

Barry D. Sneirson, Manager
ElectroMechanics Department
Wright Line
Worcester, Mass.

IBM Should Not Be Penalized For Being First and Best

As it was surprising to Joan Van Horn [CW, Oct. 13] that no one does anything about IBM's dominance, it is surprising to me that *Computerworld* would give her that much space to say nothing.

She crys: bigness is bad, save us from IBM. The business world is a tough place to live, no matter what your product is. IBM was there first, with the most, and has worked hard to stay number one. Competition has to be good to survive. RCA and its product line wasn't.

Miss Van Horn calls for Nader and Mintz, to slay the dragon IBM when they should have been turned on RCA long ago for inferior equipment and service.

As for IBM having loyal customers, what's wrong with that? Good equipment and service go a long way toward customer loyalty.

Her viewpoint on splitting up IBM is ridiculous (many small companies held out of competition on complete systems for 20 years). What kind of capitalism is that? What she is calling for, in effect, is a subsidy for the other computer manufacturers. This is not the answer in any case.

Innovation is spawned by competition. If it wasn't, would we see all those small peripheral equipment companies springing up all over the country? I admit none of them represent a major threat to IBM in its mainframe line, but some day, collectively, they will be. Every day IBM loses top executives and scientists to these smaller firms. This is where IBM's competition is now.

Watch the market place, it works.

If bigness is bad, and we're stifled by IBM, why are we the number one country in computers? As for social responsibility, IBM, like most big corporations, has demonstrated social responsibility in ways no smaller firms could or would ($). Miss Van Horn's comment about our auto industry's problems being related to the dominance of the big four won't hold water either. West Germany seems to be doing well on a single major auto industry and so is Japan.

I feel her article, like RCA's product line, left a lot to be desired.

Russell H. Hutchins
85 Second St.
San Francisco, Calif.

Here's a Way to Reproduce 'Non-Reproducible' Bills

We have an economical solution for the people who wish to make copies of their Diners Club statement [CW, Sept. 29] or any other blue material, such as spirit duplicated copies.

Place a sheet of yellow plastic over the item to be copied before inserting in the copy machine. The yellow plastic, in combination with the blue, makes the blue appear black to the copier, thus producing acceptable copy. Try it!

Perhaps some enterprising organization will purchase a mailing list from Diners Club, dutifully printed out by the Diners Club computer, then send to each subscriber an offer to sell a yellow plastic sheet in the exact dimension of the Diners Club bill.

Robert B. Wares
Ware Associates
Hudson, Mass.

Everyone May Have Number

I note the Japanese plan to assign each of their citizens a number [CW, Sept. 15].

I would remind you that at the present moment this is already being done in Sweden, along a very similar pattern, and if certain individuals in the U.S. have their way, they will have everyone so coded.

Personally, I believe it is a matter of time before such a system is utilized universally. However, I do hope that your paper certainly endeavours to prevent any misapplications of such personally unique numbers.

A.D. Dunn
Canadian Gov't. Specifications Board
Ottawa, Canada

COM Acceptance Urged

The Sept. 29 issue provided splendid coverage of COM. One area which this publication and others could assist the user would be urging the acceptance of microfilm by audit firms, state and federal regulatory bodies.

Most all of the regulatory bodies, except FICA, still want printed reports. For the ecologist we might add a new slogan, "More trees and less paper."

T. Eickmeyer
Dayton Power and Light Co.
Dayton, Ohio

Gov't Purchase Not a First

An item in the Oct. 13 issue indicated a first – the Government buying a used computer. Although I was not involved in the purchase, I am sure that the Navy bought a used 704 some years ago, for use in the (now defunct) Navy Radiological Defense Laboratory in San Francisco. I believe it came from a New England General Dynamics installation.

Ken Pollock
San Francisco, Calif.

No Comparison Made

I wish to correct the misrepresentation of my remarks as reported by E. Drake Lundell in the May 26 issue.

My remarks at the SJCC were concerned with describing the main directions and some results obtained by Soviet scientists working in cybernetics.

I made no attempt to compare the levels of computer development in the U.S. and the USSR. It is my personal belief that such comparisons are extremely difficult because of the complex nature of computer science.

It is not only necessary to take into consideration hardware and software levels of development, but many lines of mathematics, theoretical and applied cybernetics.

Finally I wish to say that statements made in Lundell's article are his own and could not have been concluded on the basis of my presentation at the conference.

Dr. S.I. Samoylenko
Moscow, USSR

The remarks in question were not part of Dr. Samoylenko's presentation but were made in answer to questions from the floor. We may have unintentionally lifted one of his answers out of context. Ed.

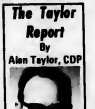
Some Are Dangerous

How Can DP Profession Control Dangerous Programs?

There are many types of programs currently running on computers. Most of them are good, productive programs. Some, however, may be dangerous. A program which could cause a riot, for instance, could reasonably classified as being a "dangerous" program.

A program which could cause a corporation to fail could also be characterized as being "dangerous." Such programs may exist. Examples could be badly operating programs that effectively revoked the probations of a number of people in a crime ridden area when they were not actually breaking the probationary rules that the computer said they were, or a cash flow forecast that was giving wrong answers.

The Taylor Report
By
Alan Taylor, CDP



And there are many other possibilities. (See Taylor Thoughts for one immediate and real one.) The real question at the moment, however, is that we should recognize the category of "dangerous" programs and start considering how they can be controlled.

Is Banning Possible?

Should they be banned? That is one possibility. But as Boston has found out, even that has problems. Before programs can be banned they must be recognized as being dangerous, which means that we have to have a set of methods to recognize dangerous programs.

In fact, of course, banning them is not an adequate control. It would be almost unenforceable, and it would be losing unnecessarily the values that are available in computers. So we have to look for some alternative control method.

There are four perfectly good methods of controlling dangerous items that can be seen in many other professions. One of them, familiar to most drivers, is the ban on transportation of explosives, propane gas etc. on some parts of the super highway systems. This particularly occurs where a tunnel is vulnerable to a possible explosion.

Another technique of control is found in the reporting of the incidence of failures, such as outbreaks of contagious diseases.

A third method consists of requiring particular plans to be signed by qualified engineers.

Finally, an equivalent professional approach demands that the actual work is supervised by a responsible professional – such as in the pouring of concrete.

Four Alternative Methods

This gives us four techniques of control other than banning – specific local controls, explosives in tunnels; failure reports, contagious diseases; professional design, certified plans; and professional supervision of actions, on-site attendance during operations.

Would any, or all, of these be applicable for data processors?

Take the point of local control; is it possible to ban programs that are carrying "explosives" from particular parts of the data processing highways?

To do this we would need to be able to define a danger equivalent to the tunnel being destroyed, a capability of controlling the danger, and, by contrasting the size of the two, be prepared to come up with a specific order.

Local Control Nonprofessional

This can probably be done but the danger must be located before we can start. Noticeably the danger is not actually related to the program itself, but instead to the problem of replacing a tunnel. As such, the expertise involved was not that of the explosives maker, and even less that of the driver. Instead it was that of the road engineer.

So it follows that we have to listen to the "road engineers," or their equivalent. Who are they?

We cannot tell yet, but we must admit that they can exist. They can come from any area which knows of possible disasters.

The key point of local control of computer programs is that it must be initiated from outside the profession. As such, while possible, it is not desirable from our professional point of view.

Reporting Failures

The second method of control, reporting the incidence of dangers, or of failures like the contagious disease method is really inside the profession. It involves noticing where errors or breakdowns in control have occurred, and bringing out the quantitative data which allows people in authority to know whether the danger is under control.

It works inside the profession, so from a professional point of view, it is to be regarded as preferable to the local bans. However, if action is not taken when an area goes out of control – then we will find local bans arriving.

Planning Inadequate?

The third possibility, a professional person taking personal responsibility for the operations as planned, appears to be a good idea, but from our technical standpoint has many problems.

To start with, can anyone take responsibility for, say, a Cobol program, when he does not have adequate data about the Cobol compilers? Or about the operating system?

Running the same program on different versions of the operating system may turn out to have different results. Who would be responsible?

Even more important, as our programs are constantly being changed and patched, it looks as though the professional would have to spend all day checking over the new plans, or else the whole system would fail through being ignored.

Supervision Not Available

The final level of control of computer programs appears to be the on-site supervision by a professional individual. It is the engineer who signs that he was present when some reinforced concrete footings were poured and that the temperature was above freezing, who gets into trouble afterwards if the footings fail. Can one of our professionals similarly be present, and in effective charge, in the computer room?

There are problems, in extending this system into data processing, however. Just who is present and in control the way an on-site engineer is when a program is executed? Currently, no one. Technically, therefore, we do not appear to have the equivalent control capability of having a professional person on-site during the work.

In short, currently it looks as though we have failed to provide a professionally controllable technique either for programming, or for program execution. This means that the first part of any control system against dangerous programs can only start with reporting of failures.

It also means that, from our professional point of view, the areas most suitable for the growth of a responsible profession (by means of grass-roots control and grass-roots responsibility), planning and execution supervision, are not currently technically practical.

This naturally will tend to inhibit the growth of responsible professionals.

I cannot say I like *that* idea at all.

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Taylor Thoughts

Just in case you may think computers cannot be dangerous, I noted an interesting column in the *Boston Globe* just before this year's mayoral primary. Written by David Nyhan, a State House reporter, the column concluded: "What used to be considered the electorate's 'free will' was gobbled up by the computer."

Needless to say Boston, like many cities, could be turned into a riot without very much effort these days. And the lack of belief in the basic fairness of the elections of city government (or at least near fairness) could certainly help bring about such a riot. Nyhan may indeed have a point here.

The primery elections are only attended by comparatively few voters, and so a good computer program which polled one of the "good" voters early, and which then treated him to an intense, direct mail campaign, as well as arranging for transportation, etc. on the election day might well be able to "steal" an election against the wishes of the majority of the population. Nyhan's point then, although a little bit shaking, seems to be fundamentally true.

And if such a campaign effectively costs $6 per voter (which again comes from Nyhan's column) it could well be too expensive for many small political parties – and so could effectively disenfranchise them.

And that is dangerous.

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COMPUTERWORLD

societies/user groups

'Space Age' Meaning

UK to Host On-Line 72

UXBRIDGE, England – Satellite data processing may take on a space-age meaning next year, during the International Symposium and Exhibition of On-Line Interactive Computing, or "On-Line 72."

All forms of on-line interactive computing systems and related hardware will be exhibited, according to early publicity of the September event at Brunel University here.

Additionally, it is "likely" that systems will be operating on-line with the U.S., via communications satellites, officials reported.

Few computer installations actually communicate via satellites, with an American criminal network linking Hawaii with the continental U.S. as one of the first applications.

A multi-language brochure on On-Line 72 is in preparation.

Canada Bema Show Assumes User View, Seminars Slated for DP Profitability

MONTREAL – Executives, marketing, and production management personnel will investigate methods of improving profitability through effective DP usage at special seminars to be held during the computer conference here next week.

Sponsored by the Canadian Business Equipment Manufacturers Association (CBema), the show is a combination of the Canadian National Business Show and the national Data Processing Conference. It takes place Nov. 15-18 at the Place Bonaventure.

The combination introduces businessmen to the first "integrated" trade show, according to Patrick J. Suddick, vice-president and general manager of Honeywell Information Systems (Canada), and president of CBema.

This approach also reflects the philosophy of the recent U.S. Bema conference in New York, during which various groups of computer users conducted symposia on improving DP operations [CW, Nov. 3].

The seminar side of the conference is open to management level personnel, and each day's seminar is designed for a different area of management.

On Tuesday, Nov. 16, the session will feature discussions on planning, objectives, and principles for achieving the "profit potential of computers for senior management."

Production, Marketing

The Wednesday topic is "the profit potential of computers for marketing management," and the Thursday meeting will be addressed mainly to production managers.

Consultants and corporate presidents will comprise most of the speakers. All three sessions are open to management people at $5 per session, through the show office, 1450 Don Mills Road, Don Mills, Ontario.

On the exhibit side, the show is bigger than the U.S. version – almost twice as big. More than 130 of Canada's manufacturers of computers and office products will display their services, systems, and supplies; 71 companies exhibited at the U.S. show.

The exhibits will be in Concordia Hall, Place Bonaventure, are free to the public, and will be open from noon to 10 p.m. Monday through Wednesday, and noon to 6 p.m. Thursday. The computer seminars will run from 10 a.m. to noon Tuesday through Thursday at the Hotel Bonaventure.

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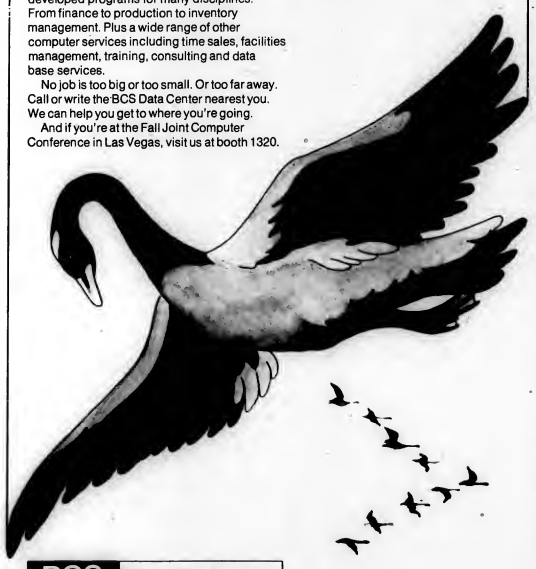

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Top Positions Taken, Sought by Nasis, Ifip, Other DPers

MINNEAPOLIS – The National Association for State Information Systems (Nasis) has installed Everett McCoy as president. McCoy is the top DP official for the state of Louisiana.

John L. Gentile of Illinois has also been elected president-elect. Regional representatives were also appointed at the recent annual conference here.

Nasis has been active in standardizing state contracts with vendors, and in increasing cooperation between state and federal agencies. The group is a spinoff of the Council of State Governments.

• • •

Prof. A.S. Douglas, deputy president of the British Computer Society, has assumed the role of vice-president of the International Federation for Information Processing (Ifip).

Douglas had been the UK's representative on the Ifip general assembly for 18 months, and was elected president just before the Ifip '71 Congress in Yugoslavia.

• • •

James C. Emery, professor of industry at the University of Pennsylvania's Wharton School of Business, has been elected to a year's term as president of the Society for Management Information Systems.

• • •

Robert J. Marsh, administrator at Candler General Hospital in Savannah, Ga., has been elected president of the Systems Evaluation and Exchange of Knowledge (Seek) organization, a hospital DP association.

Marsh is also president of the Georgia Hospital Association

• • •

The American Federation of Information Processing Societies, (Afips), is seeking nominations for next year's Harry Goode Memorial Award.

Eligibility is restricted to living individuals who have made outstanding contributions to computing, through single or a series of efforts, publications, or academic activities or writings. Nominations should be sent before Jan. 15, 1972, to Montgomery Phister at Afips, 210 Summit Ave., Montvale, N.J. 07645.

Random Notes

UCS Options Reduce Cost Of CRJE, Remote Batch

KANSAS CITY, Mo. – Users of the United Computing Systems conversational remote job entry and remote batch services may now choose either deferred or delayed processing options if their requirements can be met with evening or overnight turnaround.

Deferred processing available after 6 p.m. weekdays and all weekend, is offered at $350/system hour, compared to $450/system hour for standard service. Delayed service, after 8 p.m. weekdays, is priced at $250/system hour.

UCS, at 3130 Broadway, 64111, offers CRJE, Remote Batch and time-sharing via dial-up lines to local offices across the country.

$100/mo Application Package Runs on Full CPUs or Minis

ENGLEWOOD, Colo. – A broadbased package of applications is available from Computing Corporation International, for $100/mo, cancellable on 30 days notice.

The package includes accounts receivable and payable, inventory control, payroll, labor distribution, and general ledger programs.

Written in Fortren IV, they have been run on IBM 360 and other mainframes, and on HP 2116C and Varian 620 minis. In addition to the monthly rental, there is a $600 initialization fee, CCI said from 3375 S. Bannock, 80110.

OS/360 Users Get Flexible APT, CL Tape With Intermod Package

MANHATTAN BEACH, Calif. – Parts manufacturers are able to do more flexible APT processing but still produce Cutter Location tapes compatible with IBM post-processors, with the Interactive APT package available from Intermod.

Implemented in a 50K partition under OS/360, Interactive APT includes cross references to all variables, several Fortren-type features, continuous motion statements and a special point-to-point language. The basic package costs $15,000, from the firm at 2100 Sepulveda Blvd., 90266.

Graphic Applications Extended

AUSTIN, Texas – Designed to extend normal graphics applicatons, UCF-1 from Unitech, Inc., consists of three subroutines to compute spline and piecewise interpolation functions, and to compute polynomial least squares curve fits.

Written in Fortran IV, the routines are said to be operational on most medium to large scale CPUs equipped for graphics output. The $300 package can be ordered from 1005 St. Elmo Road, 78745.

4460 COM to Use 'Scrip 3-U'

SAN DIEGO, Calif. – Users of the 4460 Stromberg Graphix Recorder computer-output-microfilm system, are able to produce titled microfiche from "almost any" common print language tapes or graphic data streams, with the Scrip 3-U software now available from stromberg Datagraphix Inc.

The program which runs on the mini in the 4460, is said to relieve the user of any microfiche management programming on his mainframe. The software also provides 4460 simulation of other printers and plotters.

User Shapes Modules

Infonet Has Payroll, Ledger Systems

By Don Leavitt
Of the CW Staff

LOS ANGELES – Users who want to leave their in-house installation free for more esoteric applications can now run payroll and general ledger work, tailored to their needs, on the Infonet time-sharing network of Computer Sciences Corp. (CSC).

The newly-announced applications both operate under CSC's Basic Management Information System (Bmis). They can be used individually or linked together into a larger financial reporting system, Infonet spokesman said. Written in Basic, they include interactive "tutorial" aid so that non-EDP personnel can use them.

Each application is made up of modules or "kernals" which can be individually modified from the user's remote terminal to reflect his processing or reporting needs. The general ledger system, for example, is designed on an open chart-of-accounts basis, allowing the user to set up any schedule of accounts he desires.

The payroll system can handle hourly and salaried employees, and any frequency of pay period. Standard hours and pay rates are stored so that only non-standard hours need to be transmitted. Paychecks and earnings statements can be printed at the user's terminal or typed by user personnel from the Infonet-prepared payroll registers.

The general ledger system is said to produce four basic reports each month. These include balance sheet, income statement, and summary and detail trial balances.

Printouts of the general ledger master file and the transaction file can be generated on request to provide an audit trail, and to assist in reconciling bank statements or developing analyses of revenues and expenses.

Infonet's payroll system provides supporting documentation in addition to paychecks and earnings statements. Year-end federal tax forms (W-2s), quarterly tax reports, and reports of current earnings and deductions for each employee are included.

Job costing and labor distribution reports can also be provided as needed. The logic that generates these reports is so modularized that they can be produced at either the beginning or the end of the normal payroll processing, Infonet said.

Headquartered at Century City, 90067, Infonet service is currently available in more than 100 cities in the U.S. It is also available in Canada, Australia and Mexico, company spokesman noted.

Cash Flow and Rates of Return Analyzed Using Cosmic Package

ATHENS, Ga. – Users can perform interactive economic evaluations and justifications of new equipment, processes or systems with the Discounted Cash Flow/Rate of Return (DCF/ROR) software designated MFS-19040, available from Cosmic.

A set of three programs, the package includes the DCF/ROR program itself, an Interest Factor (Intfac) program, and a Depreciation (Deprec) program. Used together, they are said to reduce all parameters to the financially sound common denominator of "current worth" and to calculate a resultant rate of return on whatever investment is being considered.

The DCF/ROR program provides the user with either a detailed printout of all period cash flows, both net and discounted, or final values only.

Intfac provides calculated data for various interest factor considerations, which include compound amounts, present worth for any specified initial amount, interest rate and number of years.

Deprec calculates the year-beginning book value, the annual depreciation amount and the cumulative depreciation through the year ending.

Written in Basic for use on a GE 420 time-sharing CPU, the software may be adaptable to other configurations that support Basic. Users can acquire the entire package on 7-track magnetic tape, which Cosmic provides, for $300. Cosmic is at 112 Barrow Hall, University of Georgia.

$50 Each Buys 1130 Applications

ORCHARD LAKE, Mich. – IBM 1130 users can now get four complete software application packages, which were sold for $3,000 each, for $50 apiece from Paul Tripp, past president of Tripp Computer Associates Inc.

The programs, all written for an 8K 1130, include a balance forward accounts receivable system and a general ledger program. More specialized is a transient or one-time billing systems.

PCS Outperforms IBM

A project control system, including Pert capabilities, uses the same input and produces the same output as a package from IBM, but does the processing 10 times faster, he added.

All of the programs are said to be debugged and fully operational. Coded in Fortran IV, they can be easily adapted to any other CPU that supports Fortran.

Tripp's company went out of business last year, and cannot provide any on-site installation support for users. The $50 asked for each package covers the cost of source deck reproduction and documentation.

Documentation alone is available for $5 for each package, and a color brochure describing the systems is available free, as long as they last, Tripp added.

Requests for the software or documentation should be mailed to Tripp at Box 252, 48033.

IBM Clarifies Acquisition, Distribution Plan for IUPs

WHITE PLAINS, N.Y. – Users who provide software for distribution under IBM's Installed User Program (IUP) plan can "normally" expect to share in any revenue generated by their packages. And users who acquire software under the IUP plan will be charged for from 1 to 24 months of use, depending on the particular package.

The peculiarities of the IUP plan were spelled out for CW by IBM spokesmen reacting to the story of the only IUP acquisition, announced to date [CW, Oct. 20].

In that instance, IBM acquired all rights to a billing and accounts receivable program from Indian River Memorial Hospital in Florida. Although each IUP contract is to be individually negotiated, IBM now says it will "normally" seek only marketing rights to the software.

Hospital officials said their agreement with IBM was ideal for the institution's non-profit status. They wanted to let other hospitals use the software but they couldn't sell it, and they couldn't justify giving it away.

The agreement with IBM almost exactly offset development costs, the hospital said, and will make the package available to other users at minimal cost. It does not include any revenue-sharing.

The revenue-sharing provisions of the "normal" IUP contract will provide developers with extra income when their programs are being used, but this might well be offset by a lower payment for the rights when the marketing contract is originally signed by IBM.

Under those circumstances, developers will be encouraged to produce solid programs that have good initial appeal and continuing usefulness.

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Librarian a Real 'Daisy'

SAN FRANCISCO – The Data Set Inventory System (Daisy) now available on a nationwide basis from American Information Development (AID) controls the tape and disk library functions in IBM 360 or Honeywell installations.

A stand-alone program that requires manual entry of daily activity, Daisy is said to provide more extensive retention cycle options than more automatic systems. Through the use of these options, turnaround time on the tapes and disks is much improved, AID said.

The library master file may include an indication that a data set is not to be scratched until a related job has been run. Logic within the Daisy daily run is able to determine when that condition has been met. Daisy is also able to modify its retention cycle calculations to reflect processing done at different times of the week or month.

The system has been operational for more than two years, and has been used to control libraries ranging from 1,000 to 25,000 reels of tape. Written in Cobol, it requires 48K when used in DOS/360 or in a Honeywell environment.

An OS/360 implementation requires 96K bytes of available core.

Price of the Daisy system ranges from $4,800 to $6,800, depending on the version. AID is at 48 Peter Yorks Way, 94109.

Small Cities, School Districts, Colleges Use NCR Package to Control Budgets

DAYTON, Ohio – Municipalities and educational institutions or school districts with access to a 16K Century CPU can control all income and expenditures through the Stewardship and Management Accounting System, now available from NCR.

Basically, the system collects, summarizes, analyzes and reports the sources and allocations of all municipal or institutional funds.

Stewardship accounting reports describe the current status of each fund group, highlight special financial developments and report the total current operations of a municipality.

Management accounting reports provide financial control information for planning, allocating, approving and administering budgets, evaluating and analyzing financial trends, and forecasting developments that may significantly affect a municipality.

The system is based on the use of a flexible 18-digit account numbering structure which can make full use of any existing numbering system.

The system can process up to 5,000 different accounts, 10,000 vendors and 4,500 outstanding purchase orders, according to NCR. Checkwriting and encumbering are optional operations.

Uses Dual-Disk Units

Set up on dual-disk memory units, system master files contain account descriptions, department descriptions, vendor descriptions (if checkwriting option is implemented), financial transactions, outstanding purchase orders, summary and year-to-date expenditures and balances of all accounts.

System logic is able to identify and process 29 financial transactions which, NCR said, include every possible type of activity in a municipal accounting system.

Reports can be produced on a daily, weekly or any other periodic basis. The summary statement of accounts shows the beginning cash balance and beginning fee balance of each account. In addition to other data, this report lists separately all accounts that are overspent.

The outstanding purchase order report provides a record of total encumbrances, broken down by department if more than one is included under a single PO.

Audit lists are generated to document all transactions involving changes in account, department and vendor description files. Each month, a trial balance is run.

A summary statement of accounts and overdraft report, balance sheets and income statements are also produced on a quarterly basis.

As an option, the system can print out accounts payable checks and remittance advices and create a check register.

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S/3 Model 6 Users Promised Fortran

WHITE PLAINS, N.Y. – Users will be able to develop and use Fortran IV programs on an IBM 3/6 with a disk-oriented compiler from IBM, but they will have to wait until the fourth quarter of 1972 for delivery of the new software.

Although the new compiler can be used on the 3/10 as well as the 3/6, it is not expected to replace another IBM Fortran which is being developed specifically for the 3/10, with a delivery date of the third quarter next year.

Actually, System 3 users need not wait for either of the IBM Program Products in order to use Fortran IV. Pi Fort, an Ansi-level compiler, is available now for 3/10 users, from Programmatics Inc., Los Angeles.

The PI package will be operational on the 3/6 "as soon as it can be adapted to a disk environment," according to a Programmatics spokesman. That should be in about two months, he added.

IBM's S/3 Fortran processors contain the features defined in the ANS basic standard, some of the extensions supported by IBM 1130 Fortran, and some features available normally only on some of IBM's full Fortran compilers for the 360.

These features are said to include the DEBUG facility, which aids a user in locating errors in a Fortran source program.

Both the IBM compilers and Pi Fort support real numbers and integers. IBM's packages can be supplemented by a commercial subroutine package which is equivalent in function to the 1130 commercial subroutine package, an IBM source said.

The IBM compilers will each require 12K bytes of main storage and Pi Fort has similar requirements.

Pi Fort leases for $100/mo from Programmatics Inc., 11661 San Vicente Blvd., Los Angeles, and the IBM compilers, once they are available, will have similar monthly charges.

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State vs. FCC Methods

Certification Standards Needed

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – As work continues in several areas to find data certification procedures that may replace the present required Bell DAAs, the need for nationwide certification standards is becomming increasingly apparent.

One group of users that probably will have a certification tariff before the FCC rules on the issue is the subscribers of the Rochester Telephone Corp. (RTC) in upper New York state. RTC has proposed a certification tariff to the New York Public Service Commission that would require a Network Protective Device (NPD) instead of a Bell Data Access Arrangement (DAA).

If the Rochester plan is approved early next year as some observers anticipate, users of non-carrier data sets in RTC's service area could find themselves with an interconnecting device not-compatible with the FCC's and Bell's national tariff requirements. AT&T has said that it feels the NPD does not provide sufficient network protection.

Perhaps in anticipation of such incompatibility, the National Association of Regulatory Utility Commissioners (Naruc) has called on the FCC to establish a federal state joint board to study the area.

Communications

The recommendation for a study board was made in a letter to FCC chairman Dean Burch by Naruc president Francis J. Riordan. The letter proposed that all committees now working on the interconnection problem be required to report to the joint board.

The FCC is presently studying a plan to certify PBX equipment that could eliminate Bell's connecting arrangements. While this study group is not directly concerned with data equipment, FCC staff spokesmen have told CW that the standards proposed for PBX equipment will undoubtedly set a precedent for certification programs in the data area. In addition, the FCC staff is known to be considering data modems as the next type of equipment to come under study.

At issue for users is the possibility that the use of non-carrier equipment with local interconnection tariffs approved by a state regulatory agency could be technically different from the interstate standards now being considered by the PBX study board. Admittedly the PBX advisory board and any that follow in the modem area can only make recommendations which then must be considered by the FCC staff and voted on by the commission. But the commission is attaching great importance to the PBX study group and has in fact taken the unusual step of contacting the International Communications Association, a user group, to solicit a statement on interconnection standards and problems. State regulatory representatives are also on the PBX committee.

Asked about the possibility of different state and federal standards adversely affecting users, one FCC staff official said that undoubtedly any state certification plans for non-carrier data equipment would "have to fall in line" with FCC standards.

Hopefully such changes will require the local carrier to pay for the costs of providing the data user with the necessary connecting equipment and/or inspection procedure to comply with interstate FCC tariffs.

AT&T Admits Independent Data Set Installations

WASHINGTON, D.C. – Data users apparently are beginning to install non-Bell data sets. Surprisingly the confirmation comes from AT&T.

In recent testimony before a Senate committee studying tax credit legislation for public utilities, Alexander L. Stott, AT&T vice-president, said the Bell System has "lost 10,000 data sets" to competing suppliers.

AT&T first initiated its present interconnection tariffs in January 1969. By July of this year, more than "40,000 known connections of competitive equipment" had been installed.

Although this figure includes both voice and data devices, Stott said that the number would double by the end of 1971. Presumably if the prediction is accurate, the use of non-carrier data sets will also rise sharply.

Since each non-carrier data set installed by users on the Bell System requires the use of a DAA device as a connecting arrangement, it would be expected that the amount of DAA installations approximate the amount of data sets that Bell says it has lost.

But the latest Bell System DAA tabulations submitted to the FCC show about 3,000 fewer connecting arrangements installed. AT&T told the commission that by the end of July, 3,972 manual DAAs and 3,000 automatic DAAs had been installed at user sites.

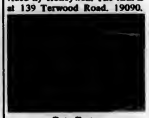
In July the Bell System installed 408 manual DAAs and 371 automatic DAA for users with independent data equipment, AT&T said.

Error Testor Can Select From 19 Data Speeds

WILLOW GROVE, Pa. – A Bit Error Rate Tester, Bert 901, that provides complete data system testing and evaluation in a single portable unit has been introduced by II Communications. In addition to counting bit errors, the Bert 901 counts block errors to measure the effectiveness of data transmission systems. Bit error count, block error count, and block count are displayed.

Bit rate selection is provided for nineteen standard synchronous rates from 75 bit/sec to 1.54 M bit/sec. Asynchronous operation may be used up to 9 M bit/sec.

Additional features of the Bert 901 include remote print out, operation from a remote console, the front panel error and sync self test switches. The 901 may be used for equipment testing and data transmission system evaluation and fault isolation. Other uses include testing and evaluating modems, multiplexers, RF links, voice grade data circuits, T-carrier systems, disk memories, and magnetic tape data recorders. The 901 is priced at $2,950 for 30 day delivery, with maintenance provided by Honeywell. The firm is at 139 Terwood Road. 19090.



Data Testor

Automatic-Answer Feature Available As Terminal or Attachment to TTY

SUNNYVALE, Calif. – Anderson Jacobson has introduced an automatic-answer teletypewriter terminal with built-in modem. The terminal allows unattended operation and the unit can connect to Bell CBS and CBT automatic DAAs, the company said.

In addition to providing a complete terminal unit, a modem and control panel "kit" is available for users who have Model 33 TTYs installed.

The originate/auto-answer switch on the control panel is spring loaded to the auto-answer position so that the terminal is always set to receive a call. A light in the switch indicates that all conditions are satisfied for auto-answering, including power on, DAA connected, and adequate paper supply. To originate a call, the operator pushes the switch momentarily to the originate position. After the call is complete, the modem automatically resets itself to the auto-answer mode. Half or Full Duplex operation is optional.

The price for the preassembled ASR terminal is $1,954, or $85/mo. Purchase price for the kit is $565. Anderson Jacobson, Inc. is at 1065 Morse Avenue, 94086.

Bits & Pieces

Philips Adds Ledger Card CPU With Dual Form Feature

NEW YORK – Philips Business Systems Inc. has announced the P-358 magnetic ledger card computer, the fifth system in the P-350 line.

The P-358 has two independent pin-feeds for handling different sets of continuous forms simultaneously. The system accommodates a wide range of peripheral equipment including paper tape and card equipment. The P-358 is available with a variety of pre-programmed software packages and no special site preparation is required for the desk-size processor.

The system is available for $410/mo with a 800 word core memory; 800 and 1,200 word memories are optional. Philips is at 100 E. 42 St., 10017.

CTC Adds Printer, IBM Tape To 2200 Terminal System

SAN ANTONIO, Texas – Computer Terminal Corp. has added peripheral features to its 2200 intelligent terminal system. Included are the 2200LP 132-column, 150 line/min printer; the 2200T 9-track IBM compatible tape transport and the Databus I software language.

The printer costs $8,300 or $275/mo while the tape unit is priced at $8,500 or $225/mo. All rental prices include maintenance and cover one-year lease agreements. A 2K 2200 system, first introduced last year, costs $5,500 or $180/mo. The company is at 9725 Data Point Drive, 78229.

CCI Has Fixed-Head Disk

CULVER CITY, Calif. – A new fixed head disk system for use with the CC-700 communications processing systems is being introduced at the FJCC by Computer Communications Inc. (CCI).

Designated the CC-750, the fixed head system is used with the CC-751 Disk File Controller to provide a storage capacity of 31.5 Mbit. The CC-750 has a data transfer rate of 2.7 Mbit/sec and an access time of 16.7 msec. A one Mbyte configuration of the CC-750 is priced at $25,000 on a 90-day delivery. CCI is at 5933 W. Slauson Ave., 90230.

Diablo Uses S/3 Type Disks

HAYWARD, Calif. – Diablo Systems Inc. has announced the Series 40 cartridge disk drives which are described as being fully compatible with IBM S/3.

The drives use the IBM 5440 cartridge and they can operate at either 1,500 or 2,400 rev/min, Diablo said. Two models are offered, the 41 has one removable cartridge with a capacity of 24 Mbit. The Model 43 has one removable and one fixed disk for a total capacity of 48 Mbit. The Series 40 will be shown at FJCC and first deliveries are scheduled for early next year. Diablo is at 24500 Industrial Blvd., 94545.

HP Has ECG Medical System

WALTHAM, Mass. – Hewlett-Packard's latest offering in the medical computer marketplace is a dedicated, turnkey ECG interpretive System, for use on-line or batch. ECG analog input data from HP's automatic 3-channel ECG terminals passes through an A/D converter to a 16K version of the HP 2100 mini-computer for processing.

Uses 2316-type Packs

COM System Accepts Disk, Tape Input

By Ronald A. Frank
Of the CW Staff

SANTA CLARA, Calif. – The 1670 off-line Computer-Output Microfilm (COM) system, that can use a disk drive as an input device, has been introduced by Memorex Corp. The 1670 also accepts normal tape input.

Designed for disk-only installations, Memorex said the disk input gives COM users "more reliable and faster" operation. Although the 1670 COM system is compatible "with any IBM system," Memorex said the user must use a Memorex disk or tape drive.

Memorex has two disk drives for use with the 1670. The 1672 is a 100 cylinder drive while the 1674 is a 200 cylinder unit. Both use the Memorex Mark IV disk pack which is compatible with the IBM 2316 pack. Although the packs are interchangeable, Memorex said that random access capabilities of a normal disk operation could not be utilized with the COM system, because of software restrictions. For tape input the Memorex 1676 9-track drive is used.

The 1670 also features a dual output capability allowing the user to switch-select microfilm or hard copy via the Memorex 1678 impact printer that operates at 1,100 line/min. Paper and film output can be intermixed, Memorex said.

The new COM system is an outgrowth of the Memorex 1603 microfilm printer but current users cannot field-install the 1670 capabilities, Memorex said.

Also introduced was the 1605 Microfiche "Composer" which can produce fiche directly from the 1603 printer. The unit can transfer 16mm roll film input into fiche format at 42 times reduction at a rate of 40 fiche/hr. An associated fiche duplicator, the 1626, can produce copies at 400 fiche/hr. Company spokesmen were unable to quote prices, however.

Usage Plan

Memorex also announced a usage rental plan for "current and prospective" COM users. Based on a "per-frame" charge, the plan includes a "base rental" fee of $395/mo.

Litton OCR Uses Photodiode Array And Outputs Onto Ebcdic Tapes

REXDALE, Ontario – An OCR page reader introduced by Litton Systems (Canada) Ltd. uses a solid state self scanned photodiode array.

The array is the heart of the system. With its 1660 "eyes," it electronically scans ordinary printed information and converts the data to video signals for recognition.

OCR documents are moved through the reader at 3 in./sec. The lines of information are electronically scanned and characters are then converted to video signal for identification in the "recognition logic" which operates at a speed of 540 char./sec. A CRT unit with keyboard provides the operator with error correction and editing capability. Output is recorded on 9-track Ebcdic mag tape.

First U.S. showing will be at FJCC. The system is priced at $99,000. Litton is at 25 Cityview Dr.

Litton OCR System

Key-to-Cassette System Includes Card, OCR, Mark Sense Options

SILVER SPRING, Md. – Computer Entry Systems Corp. has introduced a key entry system based on cassette storage that also gives users the flexibility of using OCR, mark sense, and card input. In addition, the basic 8200 system can be expanded to communicate with remote sites. The system can input into a 360.

The 8200 key-to-cassette system can handle up to eight keystations, each having a separate cassette drive. The cassette storage is said to simplify verifying operations by providing mobility to the entered data. Using keypunch-type keyboards, the 8200 key-entry stations also include English displays of numbers, letters, and special characters. Each keystation can share a buffered memory and output can be onto 7- or 9-track compatible tape. With the tape configuration, a data link can be added.

In addition to keyed entry, the 8200 will accept 80-column cards, mark sense, and OCR-A inputs.

A typical 8200 system with key entry costs about $95/mo for each station, for on-line in-house CPU input. Adding a tape output capability would raise the figure to about $110/mo. The OCR input capability adds $395. The mark sense intput puts for $20/mo. A data link with a 3,600 bit/sec transmission rate would add $300/mo including modems.

The systems are available on a 120 day delivery from 2141 Industrial Parkway, 20904.

Honeywell Adds Paper Tape, Mag Tape to Model 105 System

WALTHAM, Mass. – Honeywell has added paper tape and magnetic tape peripherals to its Model 105 system.

Previously limited to disk configurations, the 105 can now operate with the Type 209 paper tape reader and control which can read at 600 frame/sec and the Type 210 paper tape punch which can handle 120 frame/sec.

A 556 bit/in. mag tape capability has been added using the Type 204B tape drive which has a transfer rate of 8,900 char./sec.

The 209 reader costs $268/mo or $12,375 while the punch is priced at $217/mo or $10,125. The mag tape drive is $230/mo or $11,500. A second drive can be added for $159/mo or $7,650. All rental prices are for a five-year lease but one-year plans are also available.

CMC Has Card-to-Tape Unit

LOS ANGELES, Calif. – Computer Machinery Corp.'s CMC 8080 is an off-line, card-to-tape converter that relieves the central processor from converting card input onto tape on line.

The 8080 consists of a card reader, magnetic tape unit, controls and displays, and a central controller. The 8080 accepts 80-column cards, which it converts to 8-bit plus parity Ebcdic characters for formatting onto 9-track tapes, or 6-bit plus parity BCD characters for formatting onto 7-track tapes. All tapes are written in computer-compatible format with data blocks from one to 10 card records.

The CMC 8080 is priced at $330/mo. The firm is at 2231 Barrington Ave., 90064.

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Flexible Controllers

Independents Improve on 3420s

By M.L. Stiefel
Special to Computerworld

Users who are considering a 3420 tape transport and a companion 3803 tape controller from IBM may benefit by comparison shopping for a plug-to-plug replacement for either or both devices.

In addition to the usual price advantage, which ranges from 10% to over 20% in some instances (according to manufacturers' claims), users can realize extra throughput by taking advantage of features offered in non-IBM equipment.

For example, Storage Technology Corp. (STC) offers a controller, the 3803 Model 3, which can simultaneously control 7- and 9-track tape drives in a single unit, while IBM furnishes either 7-track or 9-track controllers. STC claims that some users with a requirement for mixed 7- and 9-track operation can eliminate one controller, saving about $600/mo.

The Ampex TC-38 tape controller provides 7-track operation at 200, 556, and 800 bit/in. while the IBM 3803 is limited to 556 and 800 bit/in. Both Ampex and STC have incorporated improvements in error detection and correction.

While IBM's controller can detect and correct only one error in a given block, the Ampex unit can correct up to six errors per block, across all tracks, before indicating an error to the operator.

STC goes still further with a controller that can correct and detect errors on a byte-by-byte basis, regardless of the errors already detected on a track. Therefore, the system can recover and use records that otherwise could not be read.

The Ampex and STC units both permit maintenance to be performed on a given tape drive while others are on-line, with no disruption in operations. This could be significant to a user with a heavily utilized system and relatively few tape transports. With the IBM 3803, all tapes connected to a given controller must be shut down in order to perform maintenance on one of them.

This is fine for preventive maintenance, when the entire system is down, but it creates a serious problem when unscheduled outrages occur during normal hours.

The STC approach also includes a unique method of loading diagnostics for testing transport and controller operation. The diagnostic programs are stored on tape, ready to be loaded into a self-contained memory in the controller.

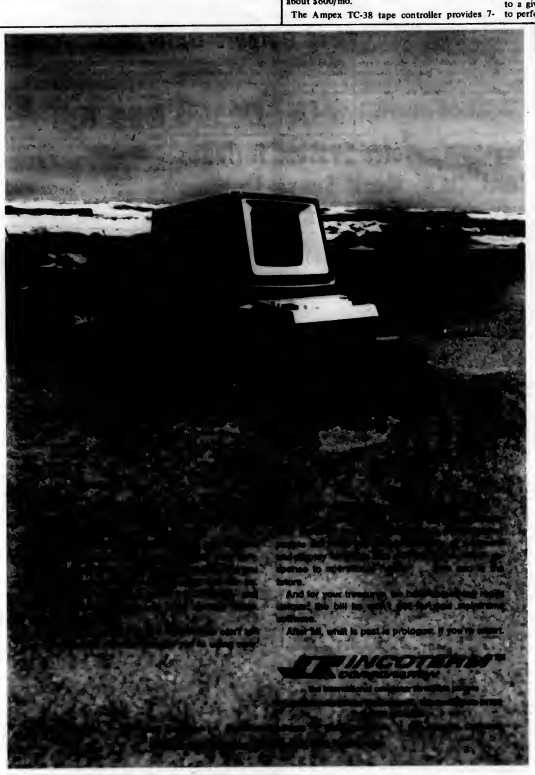
This technique permits more comprehensive testing than IBM's method, in which the diagnostics are permanently wired into the limited controller memory.

Both STC and Ampex have micro-programmed logic for their controllers, so that special features requested by users can be built in at the factory or changed by the manufacturer in the field with little delay and with low cost compared to custom-tailoring each extra feature from the ground up.

Other independents have, thus far, stayed away from attempts to alter IBM's design. Apparently this group feels that the extra effort required in engineering improvements won't be helpful to users. So they have built carbon copies of the 3803. Apparently they won't innovate until IBM does.

These independents include: Telex with the 6803-1 controller, and Texas Instruments with the 9803.

M.L. Stiefel is president of M.L. Stiefel & Co. a consulting firm specializing in the analysis, design, and evaluation of municipal information systems.



General Instrument Has Turn-Key System

HICKSVILLE, N.Y. – General Instrument Corp. has introduced the System 75, which is a turn-key system designed for stand-alone or on-line usage.

Built around a Data General Nova or Supernova, the System 75 is available as a turn-key basis with full hardware, software and maintenance support, a spokesman said.

The system is customized to user specifications and can range from $50,000 to $500,000 depending on configuration. The System 75 software uses a language called PL-75 which is described as a subset of PL-1 with a compiler and interactive processor.

Typical applications for the System 75 would be a user who wants to add a communications front end to his 360/370 installation or a user who needs a key-entry stand-alone system.

The system is currently operating in a credit authorization application and others are being developed, a spokesman said. General Instrument said in addition to turn-key equipment, complete documentation and training of user personnel is included. General Instrument is at 100 Andrews Rd., 11802.

Freedom Now!

The new high performance Caelus CMCX pack for 3330 drives is here. One hundred percent compatible with IBM 3336 packs, it provides 800 megabits of storage, 4040 bits per inch. Most important, CMCX frees you from being dependent on one supplier. Freedom you can exercise with absolute confidence. Confidence that you can depend on Caelus for trouble-free quality—and service in depth. Celebrate your freedom. For price and delivery information, call (408)-298-7080 or write, Caelus Memories, Inc., P.O. Box 6297, San Jose, California 95133.

Caelus CMCX 3330 Pack

Caelus Memories, Inc. is a subsidiary of Electronic Memories & Magnetics Corporation

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Model 109 Has Keyboard

Unit Turns TV Into CRT Terminal

WILLOW GROVE, Pa. – Digilog Systems Inc. has introduced the Model 109 Telecomputer portable electronic keyboard which converts "any standard TV set" into a CRT terminal.

Model 109 Telecomputer

The 109 uses an acoustic coupler and a normal phone line to access a remote CPU and display data on the TV screen.

The terminal can operate at full- or half-duplex (switch-selectable) at 10- or 30 char./sec. The portable unit has a teletype-writer keyboard and includes scroll and page capabilities, the firm said.

The Model 109 is attached to a TV set by connecting alligator clips to the TV "rabbit ears." The unit costs $960.

A more elaborate portable terminal includes the features of the 109 but offers a hard copy printing capability instead of the CRT display option. The printer version is priced at $1,495.

Dynaprobe 7900 and 8000s Extend Line of Monitors

ROCKVILLE, Md. – Comress has added two performance monitors to its line of systems measurement equipment. The Dynaprobe D-7900 is used to collect data about the operation and utilization of both hardware and software while the Dynaprobe 8000 Programmed Monitor can "extract precise measurements" on operating systems and user programs.

The D-7900 includes a monitor/tape buffer, magnetic tape unit, various counters and 32 probes used to measure system functions. Memory mapping of the host computer, a real-time clock and external time synchronization are standard features. A multi-function register permits the readout of strobed data from registers in the host processors. Cost of the basic system is $27,000.

The Dynaprobe-8000 includes a DEC PDP-11 "data handler" with 32K word core storage, a data controller, and an ASR-33 Teletype.

The system is priced at $23,000 and first deliveries are scheduled for January, 1972. The firm is at 2 Research Court, 20850.

DATA PROCESSING SALARY REPORT

This new and comprehensive report was prepared by our market research and editorial departments from a series of in-depth questionnaires sent to a broad range of computer users.

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- And many more facts compiled from this industry wide survey.

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HP Plotter Handles 'Any Language' Data

PALO ALTO, Calif. – Hewlett-Packard has introduced a graphic plotter that can operate in parallel with data terminals and accepts 10-, 15-, and 30-char./sec Ascii transmissions.

Graphs up to 11- by 17 in. can be plotted using "any source language" such as Basic or Fortran. Each point is defined by a eight digit XY coordinate. Vectors can be plotted in any direction and the graph appears as a straight line in contrast to the "staircase" graphs drawn by incremental plotters, HP said.

In addition to graphs, the 7202 can plot irregular curves, circles, and contours. Software is available for scaling, axis generation, and curve synthesis, HP said.

The 7202 is priced at $3,575 on a 30-day delivery schedule.

The firm is at 1601 California Ave., 94304.

Tally-TTY Type Printer Operates at 100 line/min

KENT, Wash. – A 100 line/min communications printer designed to replace conventional slow teleprinters has been unveiled by Tally Corp.

Operating at "12 times the speed of Teletype machines," the printer terminal fills the equipment gap between teletypewriter output devices and computer oriented line printers, Tally said.

Multiple copy printout can be delivered at 1,200 bit/sec over dial-up or leased line, and automatic error control routines assure accurate printout. Standard 80- and 132 column multicopy continuous forms paper is used. There are only two moving parts in the print mechanism.

Rental prices begin at $195/mo including service.

Tally is at 8301 S. 180th St., 98031.

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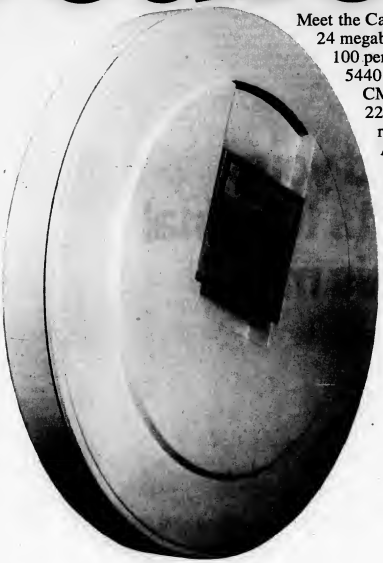

Meet the Caelus CM III. A new 24 megabit disk cartridge that's 100 percent compatible with IBM 5440 cartridges for System/3. CM III top loads—records 2200 bits per inch. Has 200 recording tracks plus 3 alternates. An outstanding performer on either System/3 or the new Caelus CD 348 Micro Mini-Disk Memory System. Be resourceful. For exciting price and delivery information, call (408)-298-7080 or write, Caelus Memories, Inc., P.O. Box 6297, San Jose, California 95133.

Caelus
CM III Cartridge

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Setype System Uses OCR Unit, Costs $19,500

MIAMI, Fla. – Datatype Corp.'s Setype system can translate typed copy into paper tape for typesetting or photocomposition at 500 word/min; the system costs $19,500.

Datatype's set-up is based on a special font for Selectric typewriters which produces a bar code directly below the typed letter. The copy, typed on ordinary paper, is run through an OCR unit, and a Digital Equipment PDP-16 then transforms the OCR signals to control commands for a tape punch.

Datatype Corp. is at 1050 N.W. 163 Drive, 33169.

Laser OCR Beats 2,000 Char./Sec

PARAMUS, N.J. – Creative Logic Corp. has introduced the Laser Vision Series 2000 optical page reader that employs a laser beam and fiber optics to read faster than 2,000 char./sec. for less than $20,000. Lower speed models are priced below $10,000.

Operation and size of the device is similar to a free-standing office copying machine. At 2,000 char./sec, a standard 8- by 11-in. page can be read and processed in 6 seconds. A self-checking code typewritten font, Logic Font, is typed below the normal alphanumeric upper and lower case characters for analysis by the reading head for specific recognition features.

Creative Logic is at 80 E. Ridgewood Ave., 07652.

Stromberg Datagraphix Leases Microfiche Systems

SAN DIEGO, Calif. – Stromberg Datagraphix has developed a lease pricing plan that it claims will allow use of its complete microfiche generating, processing and duplicating system for about the same price as the lowest cost competitive on-line recorder alone.

The plan calls for a standard minimum lease charge per month for each item of equipment included in the selected system. This figure is based on a standard per-page charge with the same rate applied incrementally to any usage over the minimum.

For example, the company's 4200 system with universal camera, film processor and duplicator may be leased for about $950. Stromberg is at P.O. Box 2449, 92112.

Would you lease a data terminal from this man?

$55 per month. $65 per month. $75 per month. $135 per month.

If you are interested in saving money, you should. Hundreds of America's leading companies are doing business with Mr. Zakarian, president of Western Union Data Services Company.

They're delighted with the low prices of his terminals and impressed with his nationwide service program.

They also like the fact that there's a wide line of terminals to choose from for Data-Phone,* time-sharing and for dedicated systems. Here are some of the models available.

$55 per month: EDT 33 ASR. Standard EIA plug-in for data set (103 series).

$65 per month: EDT 33 ASR Acoustic coupler.

$75 per month: EDT 33 ASR integrated modem. Automatic answer for data access arrangements.

$135 per month: EDT 35 ASR integrated modem. Automatic answer for data access arrangements.

Get to know Zak or one of his associates. Call Western Union Data Services Company, 16 McKee Drive, Mahwah, New Jersey 07430. Phone: 201-529-4600. Outside N.J. call toll-free 800-631-7050. Telex 12-5077.

You'll find you really can't afford not to lease a terminal from this man.

*Registered trademark of AT&T.

WU data services company

Fiche Reader Uses Cartridge

SANTA ANA, Calif. – Micrographic Technology Corp., has announced a microfiche retriever/reader capable of automatically retrieving and displaying images from microfiche housed in cartridges. The model 95 costs $1,990.

Up to 6,720 pages of information may be contained in a single cartridge comprised of 30 microfiche. Access time from microfiche to microfiche is 3 seconds, including re-filing. Page-to-page access is less than a second. Micrographic is at 1732 Kaiser Ave., 92705.

COM Printer Costs $850/Mo.

CHATSWORTH, Calif. – Pertec Business Systems' off-line COM printer can be leased for as little as $850 a month.

The Pertec 3700 reads computer-generated magnetic tape containing data formatted for conversion to readable pages on roll film or microfiche output. Pertec is at 9600 Irondale Ave., 91311.

Reader Makes Copies

GARLAND, Texas – Seaco Computer-Display has developed a microfiche reader/printer it said is smaller than readers with no printing feature. The Seaco 310 accepts silver, diazo, or thermo microfiche in sizes up to 4 in. by 7-3/8 in. Full computer pages from either 24X or 42X microfiche are projected for viewing and printing. When a paper copy is required, an electrostatic process produces dry prints in 8 seconds. Seaco is at 2800 W. Kingsley Road, 75041.

Real Time Has Portable Reader

LOS ANGELES, Calif. – A lightweight, portable microfiche reader designed for display of 4- by 6 in. and tab size microfiche is available from Real Time Systems for $89.50.

The system uses no glass trays, buttons, knobs, dials or wheels. A microfiche is simply inserted into the RTS mini-viewer model 100. There are no moving parts. Optional battery packs, cigarette lighter adapter, and leather carrying case are available. RTS is at P.O. Box 54141 Terminal Annex, 90054.

Font Capability Expanded

RESTON, Va. – Optical Recognition Systems, Inc., which markets a system to read optically and magnetically rejected E13B Mice documents, has extended this capability to four additional type fonts. Its OCR-71 unit can now read OCR-A, 1403, 1428 (numeric and alphanumeric) and unconstrained numeric hand printing. Optical Recognition is at 1928 Isaac Newton Square West, 22070.

Carousel File Made for Fiche

VAN NUYS, Calif. – A manual carousel file for microfiche and tabulating cards has been introduced by Terminal Data Corp. The RotoMate is said to provide access to a file of over one million documents on 42X microfiche in seconds. They cost from $161 to $2,660. Terminal Data is at 16130 Stagg St., 91406.

Super Systems Slip Away, FJCC Seen Mostly OEM

By Edward J. Bride
Of the CW Staff

LAS VEGAS – Now that RCA is gone, the "new" exhibits at the joint computer conferences are almost completely given over to peripherals and components.

At the spring conference in Atlantic City, RCA was the only manufacturer to display a new major mainframe. The diminishing trend has continued to its logical conclusion.

There will be few computers on display at the Fall Joint Computer Conference, and most of them will be demonstrating other elements of data processing systems.

For example, XDS will communicate with a remote Sigma 6 to help demonstrate the company's color display station and timesharing operating system.

Exhibit hours at next week's Fall Joint Computer Conference are:

Tuesday: 9:30 AM to 6:00 PM
Wednesday: 8-6
Thursday: 8-5.

Basic areas to be covered in the exhibition hall will include I/O devices, peripherals, time-sharing services, related technical trade publications, digital and analog (and hybrid) computer systems, consulting services, data communication and conversion equipment, microform equipment and services, test equipment, and source data collection devices.

Digital Equipment Corp. will show its previously announced PDP/11 family, which includes both end users and OEMs in its market place.

Several minicomputers or programmable calculators – it's getting more difficult to differentiate – will also be shown, including at least one from a Canadian manufacturer.

Most of the rest of the equipment is intended for OEMs, rather than end users, with the exception of some of the terminals and communications devices.

The memory makers will present their sales pitches to both end users and other manufacturers. While IBM is the target of most of the core extensions, one manufacturer will be showing core extensions for PDP/8s and 11s, and another will be exhibiting disk memories for that same gear.

Efficiencies in data input will also appeal to users, who will be able to see several companies exhibiting the latest equipment. Even so, the recession has made some exhibitors in this fast-moving area wary, and all the vendors will not be represented.

Systems measurement and other software enhancements will also be shown, both to the end users and OEMs. Several companies which "also" offer software packages will be in attendance, although the big software houses specializing in application packages normally choose to sell through advertising or direct marketing.

In all, there will be about 200 exhibitors here at the Convention Hall, which is consistent with the past few JCCs but down considerably from the last Las Vegas "joint" two years ago.

After 1969 FJCC, the Afips board imposed a restriction of 1,000 booth spaces (10 ft by 10 ft) and 300 exhibitors, but the limitation was strictly academic. Afips was hoping that exhibit booths would total 750 by show time, but there were no indications these hopes would be met, and 600-625 appeared the most likely range.

The exhibitor list has been fluctuating during the last several weeks, with the general trend upwards, according to an official of Afips. Late cancellations which might still appear in conference literature include Input Output Computer Services Inc., Phonocopy Inc., and Video Systems Corp.

Even so, the joint computer conferences remain a leading showcase for hardware, software, and services technology. Since the semiannual shows are held on opposite coasts, they normally draw different audiences.

The number of new announcements has diminished in recent years faster than the exhibitors, probably because of experience with new products getting "lost in the crowd" of announcements, according to one experienced company.

Grumman Data Systems, for example, introduced a new on-line tape memory system two weeks ago in New York, but will exhibit the unit for the first time here.

Many other companies will be "showing" previously announced products for the first time, with several emphasizing that users and manufacturers will have their first opportunity to see these units in operation.

Typical of this "syndrome" would be DEC with its PDP/11 and Singer Librascope with its L107 disk memory product line.

Some of the "peripheral" events and attractions of FJCC can be seen throughout this issue of *Computerworld*, with new products found chiefly in the Systems/Peripherals section.

Casino Night Life Sparkles

FJCC Visitors Can Enjoy Top Talent

LAS VEGAS – Travelers to FJCC will have the usual sparkling variety of name attractions to spice the night life, according to the Las Vegas Convention Authority.

Listed below are the major casinos or night clubs, with the performers. In some cases, the shows will change during FJCC, in which case the first attraction is listed, then the date of change, with the new performer.

CAESARS PALACE: Harry Belafonte, Nancy Wilson
CASTAWAYS: Phyllis & Bobby Sherwood
CIRCUS CIRCUS: World's Premier Circus Acts; Burlesque
DESERT INN: Jimmy Durante, Abbe Lane. (11/16: Debbie Reynolds)
DUNES: George Liberace and Orchestra
FLAMINGO HOTEL: Ella Fitzgerald (Lounge: Mills Brothers)
FREMONT: Marty Robbins, Jerry Collins
FRONTIER: Phil Harris, Harry James, The Kids Next Door
GOLDEN NUGGET: Kenny Vernon
HACIENDA: Ink Spots, Jerry Sun Show
LANDMARK: Dick Jensen (Lounge: Don Palmer, Cindy Layne, Pat Collins)
LAS VEGAS HILTON (International) Perry Como (Lounge: Bobby Stevens and the Checkmates, Redd Foxx 11/17: Bobby Vinton, Redd Foxx)
RIVIERA: Totie Fields
SAHARA: Buddy Hackett (Lounge: The Expressions, Sonny Turner)
SANDS: Sammy Davis Jr., Billy Eckstine (Lounge: Louis Prima 11/17: Bill Medley)
STARDUST: Not available
THUNDERBIRD: Latin Fire '72
TROPICANA: Al Hirt
UNION PLAZA: (show) Fiddler on the Roof.

During FJCC we will be at The Royal Inn (Penthouse)

Mon., Nov. 15
Tues., Nov. 16
Wed., Nov. 17
2-11 pm

We'll be pleased to discuss our Input and Output capabilities; the 20/20 Optical Character Reader, and our new X/3 Line Printer.

By Invitation Only

Scan-Optics Inc

Datapoint Tape Unit, Printer, Adapter Expand 2200 Ability

LAS VEGAS – To expand the capabilities of its Datapoint 2200 display terminal, Computer Terminal Corp. (CTC) will announce and display three new products at FJCC booth 1148.

A 9-channel 800 bit/in. industry compatible, magnetic tape unit with interface connects directly to the parallel I/O bus of the 2200.

A 135 line/min multicopy printer will connect to the 2200 I/O bus with no additional hardware, CTC said. A format tape for automatic top-of-form and tab operations is available.

A synchronous communications adapter will be introduced to handle Ascii or Ebcdic codes in a completely transparent mode. It may be program controlled to speeds over 9,600 baud and compatible with bisynchronous communications, CTC said.

Datapoint 2200, Peripherals

Sykes Shows Cassette Tape Unit

LAS VEGAS – Sykes Datatronics, Inc. plans to show its Cassette Tape Controller (CTC) designed to interface one or two TT 120 transports to a variety of interfaces in a modular fashion at FJCC booths 1508 and 1510. Interfaces compatible with EA1 (RS232C) and TTY current loop are standard.

When used with the EIA interface, the CTC can receive and transmit data from tape to terminal or modem.

When the CTC is used in conjunction with the current loop interface, the system can accept data asynchronously from a teletypewriter, block and write the data on tape. The unit can then read the batched data and transmit it to either the teletypewriter or to an EIA-compatible modem.

Sykes will also display the TT 120 transport OEM version and the Compu/Corder 100. The transport operates both incrementally and sequentially and features a direct access capability. Specifications of the TT 120 include 2-track recording with a density of up to 1,000 bit/in. and a data transfer rate of 12,000 bit/sec and a combined start/stop time of less than 50 msec at 5 in./sec.

The Compu/Corder 100 offers plug-to-plug compatibility to a family of different minicomputers, the firm said. It includes a TT 100 transport, tape controller, power supply, interface and software.

FJCC

Warner Electronics Unveils Step Motors

LAS VEGAS – Warner Electric will introduce its line of variable reluctance step motors designed for use in step motor servo systems at FJCC booth 1746. The units offer the advantages of closed loop control with open loop simplicity, according to the firm. The motors are available in 24, 36, 48, 60, 72, 80 and 200 step/revolution and 15, 10, 7.5, 6, 5, 4.5, and 1.8 degree step angles. Holding torque ranges from 12 oz in. to 750 oz in.

Initial applications include printers, incremental tape recorder drives, punched tape readers and punches, machine tool table drives, X-Y positioning systems, digital plotters, remote indicating and recording devices, and computer controlled inspection and material handling equipment.

Over 400 DATA 100 Terminals are already talking to 360's, 370's, 6600's, 1108's and Spectras

DATA 100 is the leading independent supplier of plug replacement batch terminals to users in government, education, industriel and commercial markets. Why? Because DATA 100 offers:

- Complete compatibility with no mein freme software modifications required
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- Choice of low-cost Model 70 or programmable Model 78 with following peripherals available now: paper tape, mag tape, punch, 300 LPM, 400 LPM, 600 LPM line printer, display, 300 and 600 CPM readers.
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SOUTHEAST
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Nashville, TN 615/329-3699
Greensboro, NC 919/273-6789
Raleigh, NC 919/782-2185
Atlanta, GA 404/432-7701

WESTERN
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Palo Alto, CA 415/328-2100
Seattle, WA 206/228-4770

EASTERN
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Philadelphia, PA 215/643-7577
Pittsburgh, PA 412/533-3633
Boston, MA 617/749-2683
Buffalo, NY 716/691-6035

CANADIAN
Montreal, Quebec 514/842-1721
Toronto, Ontario 416/447-8413

ENGLAND
Watford, Herts Watford 39611
Chichester, Sussex
Chichester: 86641
Poynton, Cheshire Poynton 2129

Data Recall Memories Can Extend IBM Core

LAS VEGAS – Data Recall Memory Corp. core memory units that may be used by 360 users to replace and/or expand their computers' capacities beyond levels available from IBM will be shown by Computer Investors Group, Inc. at FJCC booth 2030.

Memory units for the 360/22 are available from 24K to 64K; for the 360/30 from 16K to 128K; for the 360/40 from 64K to 448K; and the 360/50 from 128K to 1,024K.

Data Recall 4050 Core

Nortronics Offers Heads With Internal Shielding

LAS VEGAS – A series of 9-channel, dual-gap, internally shielded heads for computer tape drive applications will be exhibited by Nortronics Co., Inc. at booth 1203.

The design of the heads eliminates the external shield, which simplifies threading systems, allows use of a cartridge, provides easy access for head cleaning, and eliminates questions on field adjustment of the external shield, the firm said.

Kybe Plans Two Product Announcements for Joint

LAS VEGAS – Kybe Corp. plans to announce two new products at the joint, in addition to exhibiting its current line of tape cleaners and certifiers at booths 1627, 29.

Products on display will include the TMS-70 Cleaner/Evaluator/Rewinder, TMS-200 Certifier/Evaluator/Rewinder, E-26W "Super" Cleaner/Rewinder, TC-10 Cleaner/Rewinder and the Model VI-15.

Epoch 4's best salesman.

It's the 2420.

New, high-speed hardware has made the computer tape business a whole new ball game.

In fact, some conventional tapes are having a tough time keeping up with the new drives. They're supposed to. But they don't.

Epoch 4 does.

As a result, the 2420 sells a lot of Epoch 4 for us.

But, even if you don't have 2420's, you still need Epoch 4. For two good reasons.

First, Epoch 4 is the best tape you can use, right now, on any transport. Because its coefficient of head wear is less than four per cent of the industry average. Its modulus of toughness is 80 times greater. And it's the only tape in the business with a twenty-year warranty.

Second, there's the future. Sooner or later, you're going to upgrade to faster transports. 2420's, or something even faster.

Chances are, conventional tape won't perform properly on the new high-speed drives.

So, if you're buying anything less than Epoch 4 right now, your investment may soon be obsolete.

Think it over. Then try Epoch 4. It'll turn your transport into a super salesman.

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Graham, Texas 76046

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Paradyne Operates Bisync-48 Modems

LAS VEGAS – Paradyne Corp. plans to conduct continuous on-line demonstrations of its high-speed dial-up communications systems in booth 1660 at the FJCC.

The Bisync-48 modem/error control system will operate at 4,800 bit/sec on dial-up circuits, connected to a 2780-type terminal, which enables operation at two to four times the speed achieved by conventional modems on the dial-up network, the company said.

Three additional modems/error control systems will be exhibited. The M-48 is a 4,800 bit/sec modem offering optimum performance on four-wire unconditioned leased or dial-up lines.

The PIX-600 is a 600 byte/sec parallel interface extender that incorporates a 4,800 bit/sec modem, an error control system, and an I/O channel interface. It allows users to eliminate such hardware as the communications controller, high-speed modems, data set adapters, remote terminal processors, and special communications software, according to Paradyne.

The Marq-48 is an error control modem that provides a 4,800 bit/sec error-free throughput on most dial-up or unconditioned private lines, especially for incorporation into high-speed dial-up terminals.

FJCC

CorPak 11 Adds Core to PDP-8/I

LAS VEGAS – Information Control Corp. will show its CorPak 8 add-on core memory system, designed to provide the DEC PDP-8/I user with up to 28K of additional memory, at FJCC booths 2021, 23.

Available in 4K by 12 bit increments, the CorPak 11 is contained in an ICC furnished chassis including a single built-in power supply.

The company will also show its CorPak replacement memories for the IBM 360 models 30, 40 and 50, and the CorPak 11, for use with the DEC PDP-11.

In all honesty, comparing System Development Corporation's new SDC/System/One intelligent terminal to competitive terminals is a little unfair.

Not because the competition doesn't have the very latest hardware available—they do. But because nobody else has the vast knowledge of software and systems that the people at SDC have.

SDC was the first computer software giant in the world. And a pioneer in time-sharing in the early sixties, with one of the first general purpose systems that could serve a variety of customers from remote terminal devices.

So, when we set out to create a remote terminal device, like the new SDC/System/One intelligent terminal, we didn't start the way most computer companies would start.

We started with the requirements anaiysis and then developed the software and hardware system to meet those requirements. Which, when you think about it, is the only logical way to go about solving any problem.

So, in effect, it would be fair to say that the new SDC/System/One is the only truly intelligent intelligent terminal on the market today.

(For a complete demonstration, visit the System Development Corporation booth at the Fall Joint Computer Conference in Las Vegas.)

Our new intelligent terminal has an unfair advantage over the competition.

System Development Corporation

Because form follows function.

2410 Colorado Avenue
Santa Monica
California 90406

Xerox Demonstrates Software, Displays

LAS VEGAS–Xerox Data Systems will demonstrate the UTS multi-programming/time-sharing operating system using the Xerox BC 100/BC 200 color display station and other on-line terminals communicating with a remote Xerox Sigma 6. XDS intends to show how multiple users can make use of the Data Management System (DMS) for file-oriented applications while APL and other time-sharing languages (such as Basic and Fortran) are used, under the control of the one system.

The key products to be displayed at booth 1356 are the Xerox BC 100/BC 200 display stations, terminals designed for efficiency in such transaction-oriented and inquiry/response areas as business, industry, health care, education and process control, XDS said.

Xerox BC100/BC200 Display Station

Computer Automation Shows 'Naked Mini'

LAS VEGAS – New hardware features and prices for the Naked Mini and Alpha 16 minicomputers will be introduced at the FJCC by Computer Automation, Inc. at booths 1339, 41 and 43.

The company will also demonstrate three new software packages for its Capable Tester – a computer-driven, automatic production test system for digital logic cards.

The Naked Mini was developed as a general-purpose computer, minus power supply, control panel and exterior casing. The Alpha series computers are "dressed" versions of the Naked Mini, with the same performance, software, features and options.

The Capable system, now in a desk configuration, includes a computer-driven tester designed to perform functional tests of digital logic cards. The basic unit includes a CA Model 216 with 4K by 16 memory, a 300 char./sec photoelectric tape reader, autoload, 63 programmable input-output pins (expandable to 319), system interfacing and a free-standing Teletype ASR-33.

Bell & Howell Demonstrates Cassette Unit

LAS VEGAS – Bell & Howell will demonstrate its recently introduced [CW, Oct. 6] digital cassette recorder at the FJCC booths 1651 and 53.

Because it uses a tape drive external to the cassette, the Model 240 is said to make possible a tape path similar to that of large reel-to-reel transports with precision tape guidance and positive tape tension control in all operating modes.

240 Cassette Recorder

Inc. in 1967, the MDR line was recently acquired by Bell & Howell [CW, Sept. 8] and includes all optical mark document readers that are used as input devices for data processing systems.

The design of the drive system eliminates pinch rollers, belts and solenoids, the company said, and minimizes problems commonly associated with cassette transports such as edge damage, oxide shed, reel-to-reel tension variation, tape pack binding, and head wear.

The MDR line of document readers is also expected to be shown. Introduced by Motorola,

FJCC

Codex Unveils Its 9600 Modem

LAS VEGAS – Codex Corp. is announcing a second generation 9600 bit/sec modem at FJCC booth 1128.

The new Codex 9600 provides the user with 9,600 bit/sec operation, and features new visual, operational, and diagnostic features, Codex said.

It is equipped with an automatic adaptive digital equalizer which sets up in 275 msec and is continually optimized at a rate of 2,400/sec.

The Codex 880 synchronous multiplexer, will also be shown at the FJCC for the first time.

Codex 800 Multiplexer

ITC 30 Teleprinter Handles 30 char/sec

LAS VEGAS – International Teleprinter Corp. will introduce its Series 30 teleprinter at the FJCC booth 2518.

The ITC Series 30 teleprinter operates asynchronously at print speeds of 10, 15 and 30 char./sec and is available in RO, KSR and ASR modularized versions. The keyboard permits Ascii code generation and the 80-column impact page printer produces 64 printable upper-case characters and symbols by means of a 5 by 7 wire-matrix printhead. The new teleprinter can deliver one original and two carbon copies and is said to be quiet in operation.

Another feature is the provision for the use of friction- or sprocket-feed, roll or fan-fold paper, without parts interchange. The teleprinter may be operated half or full duplex as required.

Van San Device Quiets MT/STs

LAS VEGAS – Van San Corp. will show its improved Soundoff Dampener specifically designed for use with the IBM Magnetic Tape Selectric Typewriter (MT/ST) at the FJCC booth 1708.

The Model 10027, fabricated of formed steel with exterior finished to complement original equipment will reduce MT/ST noise level, even when operating with automatic output, the company said, and can be installed without machine modifications or fasteners of any type.

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Proven, high sales potential products include credit union accounting system and OS automatic job restart system.

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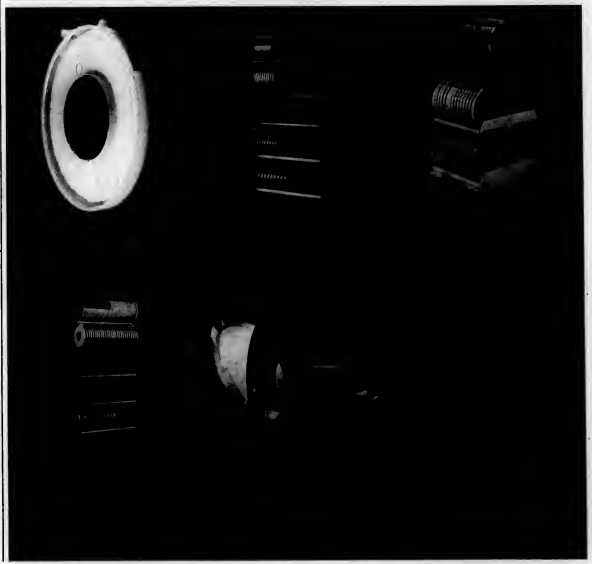
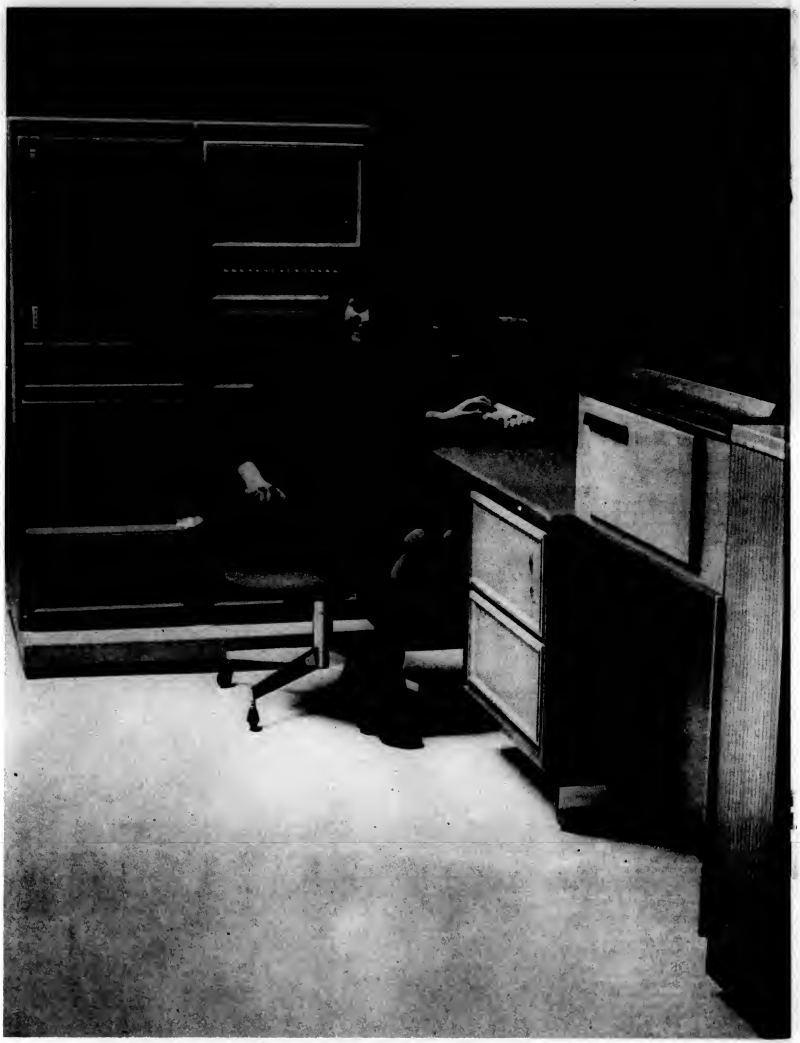




Our new System/3000 handles batch, real-time and time-sharing all at once.

At a small-system price!

Until now, you'd have to pay a half million dollars or more for the kind of capabilities built into the new HP System/3000. But those budget-breaking days are gone forever. Our adaptive computer system gives you three-in-one operation for a third the price of a good alternative.

How did we do it? We started from scratch and designed a system meant for multiprogramming. One that adapts to the best of both worlds: high performance, reasonable cost.

That's because System/3000's advanced architecture joins software and hardware for the kinds of features previously seen only on the really big systems. For instance, you'll find System/3000 offers true dynamic allocation of resources, a huge microprogrammed instruction set to slash overhead, system independent modularity. And virtual memory that assures available core for every program in any mode. All at once.

That's not all. System/3000 adapts easily to your I/O requirements. It comes with a full line of peripherals, including disc drives from cartridge size up to 50 megabytes, swapping drum, CRT, tape drives, card punches, printers and a variety of others.

And System/3000 is multi-lingual. It speaks BASIC, FORTRAN as well as HP's unique Systems Programming Language (SPL). This new language, especially developed for System/3000, combines the power of Compiler with the efficiency of an Assembler. Another plus is that all languages are fully compatible between batch, real-time and time-sharing.

But perhaps the most important feature is our Multiprogramming Executive (MPE). This operating system lets you take full advantage of System/3000's unique hardware/software capabilities. You can mix languages, use them in different modes, develop your program in time-sharing and execute it in batch. Our new system takes care of all the housekeeping chores and ties everything together.

That's just a glimpse of our new adaptive computer System/3000. There's more still to come. Write us for more information at Hewlett-Packard, Palo Alto, California 94304; Europe: 1217 Meyrin-Geneva, Switzerland.

22134

HEWLETT hp PACKARD

DIGITAL COMPUTERS

Be sure to visit us in Booth 2000 at F.J.C.C.

Milacron Mini Line Extended With CIP/2200

LAS VEGAS – The newest extension to the CIP/2000 Series of minicomputers, the CIP/2200, general-purpose, byte-oriented, microprogrammed minicomputer will be displayed at booth 1142, by Cincinnati Milacron.

It is an upward compatible extension to the arithmetic and logic capabilities of the CIP/2110, and features variable length operations, decimal arithmetic, character string and bit manipulation instructions, and a control stack facility for automatic state switching.

CIP/2000

The CIP/2200 uses the same memory and peripheral controllers as the CIP/2100. Memory size may range from 4K to 32K bytes with a 1.1 μsec cycle time. Features include a firmware bootstrap loader, a standard firmware supported concurrent I/O mode, built-in teletype interface, and a control stack facility for automatic state switching in response to priority interrupts. Options include direct memory access I/O (910,000 byte/sec), power fail/automatic restart, memory parity check, and interval timer.

FPS Plans Fast Fourier Transforms of User Data

LAS VEGAS – Floating Point Systems, Inc. has a "Customer Participation" exhibit for booth 1131 at the FJCC. Anyone with a set of up to 512 data points on Ascii TTY paper tape can have a fast Fourier transform performed, and receive a graphics hard-copy of the results.

This will be done on an FPS-50A2 FFT system. The basic system performs the transformation (forward or inverse) in less than 1 second, utilizing six-digit floating-point numbers with a dynamic range of ± 37 decades.

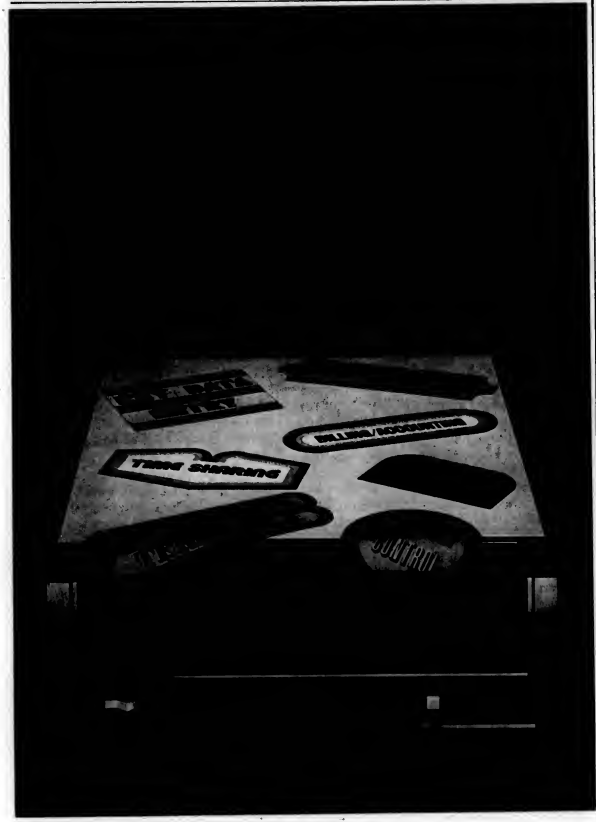
The basic system is available, with only a software change, as a general-purpose 4K-computer with high-speed floating-point capability.

The T4010 can plot the input 512 points, the real and imaginary tranforms, the amplitude and phase of the transform, a Bode diagram, and then superimpose the inverse of the transform on top of the input data in less than 20 seconds. The 4610 will then deliver a hard copy in less than 20 seconds.

Other options include high-speed line printers, expandable complex floating-point data points to 4096, real floating-point data points to 8192, and expandable precision to 11 decimal digits.

The format for the Ascii TTY paper tape is: sign, 6 floating-point decimal digits, space, E, sign, two decimal power-of-ten digits, carriage return, line feed; next data point.

FJCC



Ecom F Includes 8K Digital Card

LAS VEGAS – Standard Memories, Inc. has doubled the capacity of its Ecom F Series of core memory by the addition of an 8K bits configuration of the digital stack card, which is slated to be shown at FJCC booth 1412.

The 8K card doubles the address capacity from 4K- to 8K bits on the same physical size card with bit length from 9 to 18 bits.

Standard Memory Board

The new configurations are pin compatible with the Standard 4K-18MM digital stack modules. Speed for both the original 4K and the new 8K configurations of the Ecom F Series remains 750 nsec full cycle time.

Librascope to Show L107B Disk Memory

LAS VEGAS – Librascope Div. of The Singer Co. will unveil its L107B addition to the company's L107 OEM series disk memory line which provides up to 18 Mbits of storage capacity on 256 data tracks at FJCC booth 1714.

The memory, designated L107B, is 14.7 in. diameter by 9 in. high. TTL, NRZ electronic interface is similar to other L107 models. The L107B is available with either 8.5 or 17 msec average access time with a 2MHz bit rate.

Fastrack Memory Systems Feature Packing Density of 6,000 bit/in.

LAS VEGAS – Pacific Micronetics plans to unveil a new family of Fastrack memory systems featuring bit packing densities of 6,000 bit/in. at FJCC booths 1738, 40.

Eleven models are available, ranging in capacity from 38.4 Mbits to 153.6 Mbits, with an average access time of 16.7 msec and data transfer rates of 4.5-, 9-, 18- and 36 MHz. Data is recorded on one to four 16-in. diameter disk surfaces.

Standard features include pretested operation from 40° F to 100° F and positive pressure filtered air purging for severe industrial environments. All units are designed for 60 Hz and 50 Hz operation without performance degradation.

The first evaluation unit was delivered in September, with production quantities available this month.

Fastrack Disk Memory

Lipps Displays Heads for Drum, Disk and Tape

LAS VEGAS – A precision made, quality controlled, nine channel flying disk recording head assembly will be exhibited for the first time by Lipps, Inc., in booth 1101 at the FJCC.

Produced to customer specifications for the computer OEM market, the recording head assemblies utilize high density barium tintinate pads.

A flying magnetic drum recording head – single channel, which also utilizes high density barium tintinate pad materials, and a new IBM compatible dual gap digital head will also be shown for the first time.

Lipps Flying Head

Lorain Exhibits Power Inverter

LAS VEGAS – The Model 501CP1A1, a constantly-operating 120 V, 60 Hz, single-phase emergency power inverter system will be shown by Lorain Products Corp. at FJCC booth 1119.

This unit includes a charger, an inverter and a one hour, sealed-cell lead-dioxide battery.

During normal operation commercial ac line power is rectified to power the inverter and maintain the battery. The inverter, in turn, powers the ac load. In the event of an ac line failure, the inverter continues to power the critical load while drawing its input power from the battery. When line power is restored, normal operation is automatically resumed.

Magnusonic Offers Heads Without External Shields

LAS VEGAS – A full-line option of no-external-shield heads are to be introduced by Magnusonic Devices, Inc. (MDI) at booth 1530 during the FJCC.

In addition to the option, new 200 in./sec heads, 1,600 bit/in. heads and multi-track flying heads will be introduced by MDI.

With the no-external-shield option any standard MDI design can now be modified to operate with no external shield, the company said.

Omnironis Alter Contents of ROM

LAS VEGAS – A series of writable control memories that are compatible with popular minicomputers will be displayed at the FJCC booth 1127 by Memory Systems, Inc.

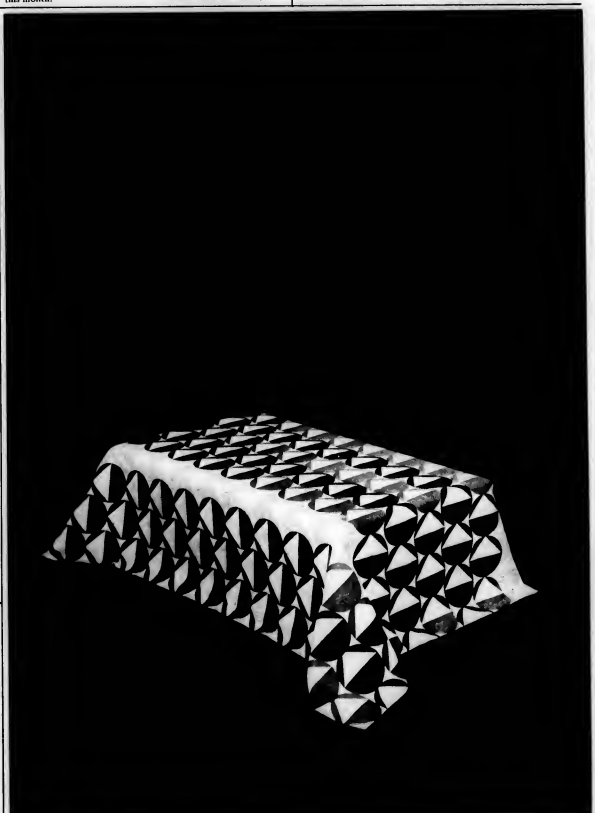
Called Omnirom, the units provide the user with the ability to modify the contents of his ROM on site, in real time, under keyboard, console or software control. The memory can be altered as many times as necessary to debug or to optimize his software.

When the contents have been debugged, the unit is operated as a conventional ROM.

Each unit of the Omnirom series has a special interface mounted on a PC card that plugs into the mainframe of the computer and is fully compatible with it.

FJCC

The standard configuration is 1K by 16 bits, expandable to 4K. Interfaces and software are available for the Micro, Data General and Interdata minis.



PDP-11/45 Joins Other PDP-11s At DEC's Booth

LAS VEGAS – Seven PDP-11 family products will comprise Digital Equipment's exhibit at FJCC in booths 2001, 2, 3 and 4. The PDP-11/45 computer, which features bipolar, MOS and core memory is said to operate up to seven times faster than the PDP-11/20. The system will be shown for the first time.

Other units on display include: The 1dacs 11/07, a real-time, process control and data acquisition system, the RSTS time-sharing system, which uses the Basic + language, and the Lab-11, a complete laboratory data system.

The Comtex-11 communications software package that allows PDP-11 users to change line controllers and terminals without extensive software revisions, the PDP-11R20, a rugged version of the PDP-11/20 and two OEM products, the PDP-11/05, and the 15, will also be shown.

PDP-11/45

Signal Galaxies Shows RAM Cards

LAS VEGAS – A complete 27 chip MOS-RAM memory card, containing 72K bits plus all electronics for address and data registers, refresh and timing controls, will be displayed at booths 1609 and 1611 by Signal Galaxies, Inc.

The SG418 MOS-RAM card is available in bit/word configurations of 4K by 18, 4K by 16, 8K by 9 and 8K by 8.

The SG418 is suited for computer applications requiring high-speed random access to stored digital data, the company said. Full cycle, read or write, time is 650 nsec with a maximum access time of 500 nsec. The memory can also operate in a split cycle, read followed by write, mode.

The company will also display an MOS memory system which provides up to 144K bits of random access memory, an optional memory tester card, a test panel and a power supply in a compact chassis which occupies only 3-1/2 in. of rack height.

Micro Switch Displays Lighted Pushbuttons

LAS VEGAS – A new product line, technological progress in solid state keyboard and switch design, and an advance in high-performance dc motors will highlight the Micro Switch exhibit at FJCC booths 2822 and 2824.

The new line is the Series 4 low-cost, lighted pushbutton switches. Among the solid state advances are the 2015N lighted modular pushbutton and several flux concentrator versions of the general-purpose subminiature 2SS solid state switch. The 4VM high-performance dc motor will introduce a wide acceleration rate range to the tape drive industry, as well as fast response time, according to the manufacturer.

DDC Reveals New Disk

LAS VEGAS – The Series 6000 head-per-track disk memory system will be shown at the FJCC by Digital Development Corp. in booth 1230.

The system features the same rotating assembly used in the company's 7300 and 7310 series systems.

The 6000 series is offered in two configurations: the Model 6100 with capacities from 1 Mbit to 4 Mbit and from 16- to 64 tracks in increments of 16, and the Model 6200 with capacities from 1 Mbit to 8 Mbit and from 16- to 128 tracks, also in 16-track increments.

Instronics Has Digitizer

LAS VEGAS – A digitizer, designed to convert any positional graphic information into usable digital form, will be shown by Instronics Ltd., as part of the Canadian Govt. exhibit at the FJCC.

The Graphic to Digital Converter (Gradicon) features fast, accurate digitizing using a lightweight cursor on an obstruction-free table.

According to the firm, it incorporates a number of innovations in digitizer design, including a unique rear projection graticule for optimum accuracy and a high response servo system that allows the cursor to be lifted from the table without losing the point of origin.

The unit analyzes, in terms of

FJCC

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STC Shows 3400 Tape Subsystem

LAS VEGAS – Storage Technology Corp. will show its 3400/3800 radial tape subsystem at the FJCC, booths 1234 and 1236. The subsystem is plug-to-plug compatible to IBM 360 and 370 computer systems, with first deliveries this month.

The 3400 tape units feature automatic threading, with or without cartridge; analog capstan control; linear high speed rewind; and automatic reel hub. The 3800-III control unit will accommodate tape speeds of 75 in./sec to 200 in./sec and features improved error correction techniques, microprogrammed/read-only memory control, and adjustment free read detection.

STC's Tape Subsystem

The subsystem is supported by STC diagnostic software.

Delta Data Exhibit Features Multiterm

LAS VEGAS – Delta Data Systems Corp. will show its programmable Multiterm for the first time at FJCC in booth 1654.

The Multiterm can be made compatible with almost any computer. A Do-It-Yourself System Chart will allow the user to select the types of terminal required for his job, including CRT displays, Batchterminals, or printers. Devices such as minicomputers, magnetic disks, tape decks and printers, can be local to the programmable Multiterm.

The Multiterm is expandable to handle up to 95 terminals. The Multiterm 2 is specifically interfaced to an IBM 2701 with a Type 3 Data Adapter, and can simulate IBM 2265/2845 or 2260/2848 displays.

Also being shown will be the Batchterm System which incorporates an IBM 1050 interface and offers peripherals.

Delta Data will also show its Delta 2000 Display Terminal and its Teleterm with line drawing and light pen capability.

Dicom's New Products Highlighted

LAS VEGAS – Dicom Industries will display several of its recently announced products at booth 1748 at FJCC.

The Dicom Model 345 batch terminal is a cassette tape system designed to expand the power of terminal installations.

The Model 171 cassette transport module and the Model 440 cassette vacuum transport, a multiple-speed tape drive, will be featured.

The Dicom Cassette Magnetic Tape Operating System, a proprietary software/hardware operating system, is designed to provide minicomputer users with system capabilities normally available in multiple-transport tape systems.

Dicom Model 345

Sangamo Displays Line of Sangamodems

LAS VEGAS – A full line of Sangamodems will be displayed by Sangamo Electric Co. in FJCC booth 1114. Included will be the T4800, a 4,800 bit/sec modem that features user tests, modulation technique and error checking.

Several P.C. card modems for OEMs will be exhibited. The C202CSC, a 1,200 bit/sec asynchronous modem on a single printed circuit card, features EIA or TTL interface and operates on the DDD network via Bell data couplers CBS or CBT.

The T103G5B, designed for up to 300 bit/sec, full duplex, DDD applications via the Bell data coupler CBT and the T103, T113, T201 and T202 families will be shown.

For the past 20 years or so, American business has been changing its traditional ways of operation to accommodate the special needs of the digital computer.

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Our standard software includes five full operating systems, a dozen languages, and hundreds of special purpose programs. Enough variety to satisfy everyone. But you're not everyone. To satisfy you we're ready to create a customized package.

The point is, we're going to look at your needs from a total system point of view: What will it take to get the job done? Then we'll tailor our products and service to fit.

We figure the more our computers fit your business, the more business you'll see fit to bring our way.

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Xerox Data Systems

XEROX

A special report published by Finnresearch Ltd. of London and the Financial Analysis Group Ltd. of Ascot, Berkshire, provides an assessment in some detail of the state of the UK market for visual display units and equipment.

The report, the most comprehensive ever published on the subject, comprises over 90 pages including market size and individual company shares, the commercial structure of the UK industry and the factors and prospects affecting the market. The balance sheets and trading accounts of all major participants are analysed in detail.

The chief outlets for this type of equipment are in large-scale dedicated systems, such as those required for reservation systems and large scale data acquisition and retrieval, says the report, pointing out at the same time that nearly 75 percent of the deliveries derive from just two companies, Ferranti and Cossor Electronics.

Costing $100, including airmail charges, the report is available from Financial Analysis Group Ltd. at Somerset House, London Road, Ascot, Berkshire SL5 7EN, England.

Potter Packs Booth With Tape Systems, Memories, Printers

LAS VEGAS – Potter Instrument Co. plans to show many peripherals for the first time at FJCC booth 1404.

The Potter SSM 7350 and SSM 7365 memories are plug-to-plug compatible with the 360/50 and 65, 67, respectively. Using LSI technology, the memories are n-channel MOS units capable of 200 nsec operation.

Potter RBT 6786

The 3420 series magnetic tape subsystems for use on the 370 will also be shown. The AT 3423, AT 3425 and AT 3427, and tape controller TC 5805 are designed to replace IBM 3420 models 3, 5, 7, tape units and 3803 controller.

The LP 3403 line printer, a plug-to-plug replacement for the IBM 1403, operates at 1,500 line/min with equal print quality, Potter said.

The Potter PS 3800 off-line print system will be demonstrated, printing at speeds up to 1,500 line/min.

The 6780 series terminals, replacements for the IBM 2780 series, will be on display and the RBT 6786 will be demonstrated. It consists of a Potter KDR key-to-tape unit with 800 bit/in. tape, and an LP 3000 line printer. The terminal is

3800 Off-Line Printer

equipped with a binary synchronous control unit.

The LP 3000 and LP 3300 line printers and plotters which operate at 135- and 300 line/min respectively will also be in action.

Potter's line of single capstan magnetic tape transports will be shown. A miniaturized high-speed printer, the HSP 3609, will also be displayed for the first time.

A.B. Dick Interfaces Printers, PDP-8s, 11, Shows New Plotters

LAS VEGAS – A.B. Dick will demonstrate interfaces to couple its Videojet printers to DEC PDP-8/L, PDP-8/E and PDP-11 at booth 2218 at the FJCC.

The company also plans to introduce new peripherals including an ink-jet printer plotter, said to be the first of its kind, and a low-cost 750 char./sec 5 by 7 matrix printer.

The interfaces, together with those already available for the Varian, Data General, and Hewlett-Packard minicomputers,

FJCC

make the Videojet printer compatible with about 90% of minis currently in use, the company said.

The unbuffered modules for the PDP-8s permit data transfers via programmed I/O or via a three cycle data break option. Bufferd versions contain a 256 char. buffer and provide data transfer via programmed I/O for asynchronous printing flexibility, the company said. The PDP-11 provides unbuffered parallel data transfers via the PDP-11 Unibus.

A.B. Dick Videojet Printer

C-2000 Cassette Unit Designed for Minis

LAS VEGAS – Cipher Data Products will announce the C-2000 cassette drive-system for minicomputer users at the FJCC. It features record and file back-spacing, high speed file load, and bi-directional search.

Based upon the company's C-200 cassette transport, the system utilizes the Ansi/Ecma checking scheme including both a longitudinal check bit and a check sum.

C-2000 Cassette Drive

Interfaces are available for most minicomputers, and standard software includes I/O drivers and a diagnostic package. Cipher is in booth 1736.

IMSL Exhibits Library 1 Subroutine Collection

LAS VEGAS – IMSL (International Mathematics and Statistical Libraries, Inc.) will exhibit its Library 1 collection of mathematical and statistical subroutines at FJCC booth 2524.

Library 1 was designed for IBM 360 and 370 OS and DOS environments and is coded in IBM Fortran IV and IBM Assembler Language. It has been tested with the G and H level Fortran compilers and the E and F level assemblers, IMSL said.

The library contains routines intended for use in analysis of experimental design data, basic statistics, categorized data analysis, differential equations and utility functions.

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Digitronics to Display OEM Line Of Input and Output Equipment

LAS VEGAS – Digitronics will introduce four OEM products at FJCC booth 1618. The 202 line printer, MCT-7 Mini Cartridge Transport, 1600 Series magnetic tape controller, and 2015 perforated tape reader are designed for use with minicomputers and terminal equipment.

The Model 200 line printer is simple to operate and includes a swinging yoke, flexible font belt, and universal multi font buffer, Digitronics said. With a 64 character font, the unit prints at 200 line/min, has 8-channel vertical format control and is only slightly larger than a typewriter.

The MCT-7, the new dc model of Digitronics' mini-cartridge transport line is specifically designed for digital use. In addition to the drive motor, the entire transport consists of a single or dual-gap head, capstan, and an optional electronics package. The MCT-7 operates at 7 in./sec.

Eight Digitronics 1620 magnetic tape transports will be demonstrated in conjunction with the 1600 series controller. The 1620 others: snap-on, off reel loading, leader clamps for elimination of tape threading, photoelectric arm position sensing, and self-contained formatter. It operates at speeds up to 37 in./sec at 1,600 char./in. (phase encoded).

A line of perforated tape equipment will be on display highlighted by the Model 2015 asynchronous reader. It offers operation at 150 char./sec with photoelectric reading and a stepping motor drive.

Model 200 Line Printer

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Bendix Will Unveil Drawing Design Unit

LAS VEGAS – A computerized system designed for use by unskilled personnel to generate engineering drawings from rough sketches in a fraction of the time required by trained designers using conventional methods will be displayed by Bendix Computer Graphics at FJCC booth 1326.

The Bendix Interactive Graphic System 100 allows the operator to communicate with the computer without knowing programming or data processing techniques, Bendix said. The operator "talks" to the computer on his own terms and in language he understands, the company explained.

All inputs are made by the operator through an all-electronic digitizer in conjunction with a free-moving cursor, a teletypewriter, and a simple menu of commands.

Output is a self-processing microdrafter that can deliver fully developed 35-mm microfilm aperture cards in less than 60 sec from the time input is received from the computer.

Quadri Displays Its New, On-Line Alterable ROM

LAS VEGAS – A new electrically alterable ROM, featuring an infinite on-line alteration capability, will be introduced by Quadri Corp. at booth 1648, FJCC.

The stack for the electrically alterable ROM is a completely interchangeable plug-in type, which permits the replacement of whole programs without the necessity of a tape load facility for each installation, the company said.

Optional indicators and switches can be placed directly on the PCB to accommodate small corrections.

Quadri's ROM features capacities up to 100,000 bits per board, read only cycle time down to 150 nsec, access times to 90 nsec, alterability on a single word basis and the ability to be divided into a ROM and a read/write system. Utilizing a low threshold, square-loop core arrayed in a 2-core per bit mode, the writing function is accomplished by coincident current selection of the desired cores, Quadri explained. A linear high-speed mode is used for the ROM operation.

Quadri ROM

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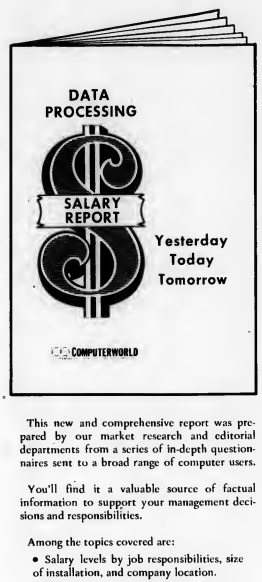

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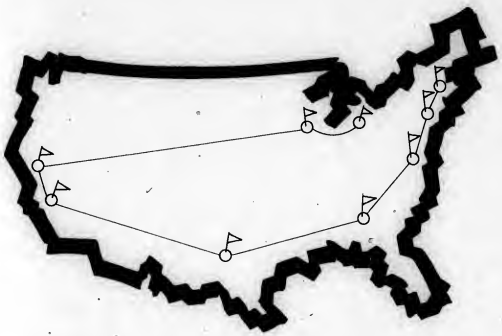

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COMPUTER industry

a Computerworld news section about the nation's fastest growing industry

November 10, 1971 Page 47

CI Notes

Calcomp Lands GSA Order

ANAHEIM, Calif.,– CalComp has received e $1.7 million contract from the General Services Administration for the purchase of disk drives leased last October by the Veterens Administration.

The systems, used in offices in Washington, St. Paul, Philadelphia, St. Louis, Los Angeles, Boston, Austin and Chicago, replaced formerly installed IBM disk drives.

Suits Fly in Mini Area

SOUTHBORO, Mass. – Data General Corp. is suing Digital Computer Controls Inc. for patent infringement end DCC has filed a counter suit alleging that the Date General cleim has no basis in fact and is an ettempt to injure DCC's business.

Data General claims that DCC's D-116 machine is based on Illegally obtained blueprints and other confidentiel information about the Nova 1200, with which the D-116 is compatible.

ITT Closes Office

COPENHAGEN, Denmark – ITT Data Services has closed down its office here and dismissed ell the steff. ITT has been having problems in Scandinavie for some time, particularly with its time-sharing service.

In August of this yeer the bureau was the subject of at leest one customer compleint as a result of which a reorganiation of the service was made. One IBM 360/40 was returned to IBM leaving only a 360/30 which will presumably now also be returned.

Sex Shop System Sold

MUNICH – Sex is big business here and data processing is being used to help handle the load.

Beate Uhse, an organization which operates 30 sex shops throughout West Germany, has ordered a 12 station Honeywell Keyplex data collection system to help keep sales figures up to date.

Supershorts

Data Processing Financial & General Corp.'s (DPF) proposed transaction with Marshall Industries will not be completed. The transaction contemplated that DPF would acquire a majority interest in Marshall's disk drive manufacturing division.

– – –

Interdata, Inc. has signed an OEM sales agreement with Nover Corp. calling for purchase by Novar of Interdata's Model 1 minicomputers.

– – –

Bunker Ramo Corp.'s Electronic Systems Division has begun production of extended memory systems to interface with CP-721/UYK-3 computers previously supplied by Bunker Ramo for a Navy communications system. The new systems add memory of 16K 16-bit words, doubling the memory capacity of the earlier computer.

– – –

Mitsubishi Office Machinery Co., Ltd. has agreed to act as Pertec Corp.'s distributor in Japan. The agreement is for sales and service of the Pertec 3700 Computer Output Microfilmer.

Mixed Omens

Fewer FJCC Exhibitors Than Last Year

By Edward J. Bride
Of the CW Staff

LAS VEGAS – Mixed omens fill the atmosphere surrounding next week's Fall Joint Computer Conference here, which is expected to provide still another tool to measure the computer economy.

There will be fewer exhibitors in Convention Center than in some recent joint conferences. The number will not even approach the record of 300- plus, established here two years ago.

Last year in Houston, a down-slope was seen and this year, about 200 will exhibit at FJCC. Officials of the American Federation of Information Processing Societies (Afips) refused to blame the economy for the Houston decline, but when the trend continued at SJCC in Atlantic City, they laid it "squarely at the feet" of the recession.

The 200-plus exhibitors at this year's FJCC will represent a higher total than at Atlantic City, but Afips officials normally compare the Fall conferences with each other, since they are on the West Coast.

The upswing in exhibitors since SJCC, however, can be seen as a good omen, along with a consistent advance registration of around 2,000.

The final number of booths will easily surpass the 400 of SJCC in Boston in 1969, when the "joints" were sharing the heydey of the computer industry, Afips said.

But the Boston "problem" was the insufficient size of the auditorium. The Convention Center's capacity of 900 booths here two years ago precipitated a 1,000-booth limitation. (In 1969, an overflow of exhibitors was placed in an "exhibit annex" in a not-so-nearby hotel.)

All these problems are past, and the surviving companies will be showing the latest in OEM and end-user products, mostly the former.

The exit of large computers, started by Control Data Corp. two years ago and completed by RCA, is a chief factor in the reduction of the number of booth spaces and the average size of the exhibits.

This last figure as diminished from over three booth spaces in the fall of 1969 (10 ft by 10 ft) to about 2.75 for this FJCC.

The reduction in size will also mean fewer free "exhibitor guest" passes for users and sales "contacts."

The paid attendance, for both exhibits only ($10) and for the full conference including technical sessions, will provide up-to-date information on travel budgets of users, as well as their buying plans.

With the computer industry's rampant growth now history, these buying plans are expected to center on system enhancements, the predominant equipment on display.

Most of the mainframe makers foresew this trend, when the large systems began to disappear. Since that time, companies like IBM, plus Honeywell and the other "dwarfs," have chosen to either exhibit at single industry-oriented trade shows, or to exhibit components or accessories at the JCCs.

If any projection can be made from all these signs, it could be that the users, free from the influence of the carnival atmosphere and nanosecond computations of huge systems, can walk the exhibit floor with serious comparisons in mind.

Germany Moves Toward National Computer Industry, Mergers Seen

MUNICH, W. Germany – Germany is the last of the three major computer using nations in Europe to attempt to establish a national computer industry, but it has a long way to go.

At the end of 1970, there were over 7,300 computers installed in Germany, or one quarter of the total European market (including Britain). At that time the growth rate had dropped to 20% in number and 23% in value, according to IDC Europa.

But only 17% of the domestic market was supplied by German manufacturers, compared with the UK, whose manufacturers held 44% share of the British market, according to the research firm.

The domestic manufacturers' share of the market, however, had risen drametically over the past two years, largely due to intensive marketing by Siemens of the RCA Spectra 70-based Series 4004 computers, IDC said.

Siemens was able to grab 14% (in value) of the total domestic market by year-end 1970, IDC Europa said, but the market is still dominated by IBM, which controls over 63% of the market and is one of the largest companies in Germany with over 20,000 employees.

Promises of Support

Presently the German government has made firm promises of support for the development of a strong unified computer industry, IDC Europa reports, and the most likely candidates for merger are Nixdorf Computer AG and AEG-Telefunken, which recently called off merger talks with Siemens.

In eddition, Nixdorf has indicated it is talking to other mainframe companies, including Control Data in the U.S. and ICL in England. It would like to use the products of some of these other companies in the German and European markets, Nixdorf said.

If an agreement is worked out between the two, it would probably call for the establishment of a separete company called the Telefunken Computer Co. Nixdorf claims to be able to get up to $25 million in government financing for such a unified firm, IDC Europa reports.

Leasing Firms Hit by Freeze Effects, Extension Probable

BOSTON – The leasing companies have had their share of problems, but now a new one has been added to the list – President Nixon's freeze on prices and wages and the mainframe makers' reaction to that freeze.

Under the freeze, IBM has been allowed by the official watchdog, the Office of Emergency Preparedness, to raise the purchase prices of its 370s by 8%, while the lease rate has been frozen, both for IBM and the third party lessors.

While it was originally thought that the new maintenance rates of the IBM 370 series make it unattractive for third party lease arrangements, several of the lessors have decided to go ahead and purchase the equipment for lease to other computer users.

But now with the purchase price allowed to go up by a loophole in the freeze ruling [CW, Oct. 27], the lessors face the prospect of being locked into lease rates that they cannot raise.

The problem will not be particularly burdensome for the leasing companies if the freeze is lifted this week. But the total freeze placed in effect by the Phase I controls is expected to be extended well into Phase II, government sources indicated last week.

And even if the total freeze is eased somewhat under the new price board appointed by the President, there is no guarantee that the board would allow the lessors to increase their rates, industry sources said.

At the same time, however, the freeze has helped the lessors that stuck strictly to IBM 360 equipment by postponing IBM's planned 20% increase in 360 maintenance rates.

Guzy Urges Commission on IBM

NEW YORK – The President and Congress should appoint a special commission to work out the details of a consent decree to settle the current Justice Department antitrust suit against IBM, according to a computer industry executive.

Such a commission, said D. James Guzy, executive vice-president of Memorex, would "assure the vigorous representation of the public interest."

The commission should be composed of economists, political scientists, lawyers, legislators, technologists, and computer users, he said.

Guzy saluted IBM's technologists, sales people, and management "for building the foundations of this critically important industry." But he said IBM's current dominance and "capacity for monopolistic actions" is not in the best interest of society, the industry, or the profession.

'Restore Competition'

The commission should "recommend means by which essential competition can be restored in the computer industry," he said.

"Government regulation," he said, "is unnecessary given the conscientious enforcement of antitrust law."

Officials at Memorex said that Guzy was expressing his own views and that Memorex was not officially involved. They did say, however, that most people at the firm "recognized" the problems he was addressing.

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COMPUTER PERIPHERAL MANUFACTURERS' LEASE/FINANCING PROBLEMS DISCUSSED

Phoenix, Arizona — Manufacturers' Lease Plans, Inc. (MLPI), a subsidiary of Systems Capital Corporation, is offering a lease/financing program geared to solve many of the problems currently confronting computer peripheral manufacturers. These problems are essentially the initial negative cash flow resulting from direct leasing by the manufacturer and equally as important, the problems of recording sales to third parties as bona fide sales.

MLPI has been offering responsive programs of this type to manufacturers in the computer peripheral industry for the past three years. However, the recent interpretation by the Accounting Principles Board (APB) of Opinions No. 5 and 7 (Accounting for Leases) has caused considerable concern within an industry heavily dependent on third party financing. This interpretation tightened up the rules, with the result that manufacturers will not be permitted to record sales to third parties as "sales" if they are obligated in any way to guarantee the third party a return on his investment. These obligations may include a form of limited recourse (repurchase agreement, rental payment guarantee, substitution of paper, etc.) or a remarketing commitment which includes a "best efforts" connotation. Such considerations, the APB has indicated will normally negate the sales concept and the transaction will have to be recorded as a loan with income recognized on a month-to-month basis as it is received.

MLPI's president, Bob Mandeville, stated that MLPI intends to remain responsive to the peripheral manufacturers' needs and will offer programs which comply with the new APB interpretations and which will allow its manufacturer clientele to record purchases by MLPI as sales on the manufacturers' books of account. For further information, contact MLPI at 3443 North Central Avenue, Suite 1200, Phoenix, Arizona 85012, telephone (602) 264-9521. Mandeville also indicated that he will be attending the FJCC in Las Vegas and that he can be reached at the Frontier Hotel from November 16 through 18.

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Cassette Standards Seen Necessary To Promote Interchange Among Users

By T.J. Smith and R.P. Kavlick
Special to Computerworld

Although the magnetic tape cassette is very new to DP users, it already has become recognized as a valuable new data storage media. Literally thousands of users and manufacturers are beginning to develop equipment and applications for cassettes and cassette recorders.

Concurrently, the American, European and international standards organizations have been hard at work on a long-range effort to provide a basis for standardization and interchange of cassettes.

Pioneers in the field originally considered audio grade Philips-type cassettes for data storage and audio grade recorders. Although the cassettes and recorders were low in cost, their reliability and durability were totally impracticable for data processing applications. Furthermore, interchangeability of digital cassettes recorded on various machines was not achieved.

Higher Quality

It was soon recognized that a higher quality cassette and a much more precise recorder were required in order to achieve a reasonable level of reliability and interchangeability. Because of the nature of the data stored on cassettes and the dependence of the user on the operation of the recorder, an unreliable device was found to be worse than no device at all.

Accordingly, the additional minor investment in a quality recorder and a quality version of the Philips-type cassette more than offset the personnel expense and delays associated with an inability to properly record or read data.

Broader Requirement

During the current industry effort to develop standards for digital cassettes and cassette recorders, it has been suggested that many applications do not require interchangeability or compatibility of media from machine to machine.

Our experience, however, has shown that there are many subtle applications of the equipment which make interchangeability a much broader requirement than initially recognized.

The primary uses for digital cassette recorders and magnetic tape cassettes in both the present and near-term future will be as data buffers for terminal, format and/or program loading, batch communications, and data collection and storage.

In situations in which the cassette is used as a buffer and data is read only by the recorder which originally wrote it, no interchange of cassettes between machines or between manufacturers is apparently implied.

Even in these applications, however, conformity to a standard is required since the present most popular method of maintaining cassette recorders is field replacement of a malfunctioning recorder within a terminal with a new recorder.

Data recorded on the cassette is retained for later reading by the recorder of the same type, so the recorder maker must manufacture each of his recorders to meet a standard, even if the standard is of his own choice.

Requirement for machine-to-machine compatibility or interchangeability is universal among applications. In these applications, a long-term ability to conform to a standard for both the physical cassette and recording technique is obvious, whether the machine is from the same or different manufacturers.

Reliability Factors

The key factors necessary to provide reliable data interchange from recorder to recorder are: tape guidance, speed control, tape tension and start/stop capability.

Small variations in each of these factors have a surprising impact on output signal amplitude, which is a key element in reliable data transfer.

In order to recover information recorded on magnetic tape, the amplitude of the signal must be greater than that of the noise. This condition must be achieved instant by instant or errors will result.

Various noise reduction techniques, noise threshold clipping, filtering, etc., are and have been in wide use in all types of digital recorders. To be effective, however, the absolute signal and noise amplitudes must be controlled.

The amplitude of both the noise and the signal is affected by several different mechanisms, which when summed can affect error rate. But the effect is twice as great in the case of interchangeability.

Deviation in tape guidance results in signal amplitude reduction roughly in the ratio of the deviation to the track width or about 2% per .001 in. This, of course, doubles in the case of interchange. Azimuth deviation can be even more disastrous. Azimuth error contributes about 2% amplitude degradation at 15 minutes of arc error.

In speed control, the amplitude of the signal is proportional to the instantaneous speed of the tape. A recorder having ± 4% long-term speed control and ± 4% instantaneous will exhibit an amplitude variation of ± 16% on playback.

Spacing between head and a tape is controlled by instantaneous tape tension. A 50 micro inch change results in about 10% signal degradation.

The speed of the tape at the beginning of a record is controlled by the start/stop characteristics of the recorder. Therefore, a 10% speed variation contributes another 10% to the signal amplitude.

Considerable care and precision is required to obtain a cassette recorder that can control the variation in these factors within narrow limits. Even a well designed recorder can occasionally exhibit performance at the extremes of its tolerances. Then the total variation in signal amplitude output could be: 10% tape guidance, 2% tape azimuth, 16% tape speed, 10% tape tension, 10% start/stop, totaling 48%.

In this case, a data error would very likely occur. Fortunately, such a tolerance accumulation occurs rather infrequently; but even tight control will permit occasional errors.

Interchangeability of the media between machines is a widely required capability. Moreover, it can be achieved only with a degree of precision in mechanics and electronics which is not found in the current rash of very low-cost recorders.

This precision, however, is called for in the American proposal and in the recently adopted European Computer Manufacturers Association magnetic tape cassette specification, and such a specification is the only way to achieve interchangeability and, in all probability, any real reliability in cassette data recovery.

Smith is vice-president of marketing and Kavlick is director of engineering at Sycor Inc.

Viewpoint

New Directions Set for Firm

Century Data Plans Unit for Tape Field

ANAHEIM, Calif. – Century Data Systems, the CalComp subsidiary formerly only in the disk drive segment of the market, has entered the tape drive market with the first of a "broad line" of new drives.

The first unit in the firm's new direction is the CDS 340 tape transport for the OEM market, a single capstan providing bi-directional tape speeds up to 200 in./sec, according to the firm.

New Line

The new product line will be developed under the direction of John J. Ring, manager of tape drive development. He formerly was manager of magnetic tape systems development with International Computers Ltd.

The new CDS 340 features packing densities of 1,600 bit/in. or 800 bit/in. (9 track) and 800, 556, or 200 NRZI (7-track). Transfer rate is 320 kbyte/sec at 200 in./sec. A high speed rewind permits rewinding of 2,400 ft of tape in 45 seconds, the firm said.

Additional features include electrically-operated reel/hubs; automatic loading; reel servo control by vacuum switch sensing; in-column rewind under capstan control; write preemphasis and read equalization.

The firm said that it planned to offer "a broad line of industry compatible tape units."

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Adapso Sets Up Software Section; Elects Officers

DENVER, Colo. – The Association of Data Processing Service Organizations (Adapso) has established a Software Section with an initial membership of 26 companies.

The first meeting of the group took place here recently in conjunction with the 33rd management conference of Adapso, according to Bernard Goldstein, association president.

Officers Elected

Larry Welke, president of International Computer Programs Inc., was elected president of the new group at the meeting. In addition, Adapso's Computer Time-sharing Services Section elected T.J. O'Rourke, President of Tymshare, as president; and Adapso itself re-elected Goldstein.

"Achieving representation among our peers in the data processing industry is a milestone in software history," according to Welke. Annual dues for members of the section start at $250.

Bridge Data Receives Multiple Card Reader Patent Protection

PHILADELPHIA – Patent protection on two card readers with multiple card capability has been granted to Bridge Data Products, Inc., through patent # 3,609,305.

The patent covers BDP's Models 8096 and 8800 multiple card readers, designed to read both the standard 80-column card as well as the 96-column card used by IBM's System/3.

Patent Features

Among the features named in the patent are: a reading head which gathers data by using a single light source to actuate either 18 or 12 (depending on the card) fibre optic input channels and photocells; a mask for adapting the reader to 80- or 96-column cards, and input hoppers which are operator interchangeable for the various size cards.

Standard Readers

Bridge Data's two standard multiple card readers operate at speeds up to 1,000 char./min for 96-column cards and up to 600 char./min for 80-column cards. In a continuous mode, they operate at speeds up to 1,200 char./min and 800 char./min for 96- and 80-column cards respectively. They also read stub varieties of the 80-column card at rates up to 1,000 char./min.

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Household Movers Seen as Best Route For Computer Equipment Shipments

By Wayne L. Kuhlman
Special to Computerworld

The shipment of computers is unique in many respects. Data processing hardware constitutes an extremely delicate electro-mechanical or electronic commodity of extremely high value in relation to its bulk.

Although individual modules may be quite dense, the amount of packaging needed to safeguard a shipment against in-transit damage can bring the overall density far below other commodities of a similar shape and size.

Also, packaging computer equipment is a costly, tremendously troublesome task. It is wasteful of time, effort and a great deal of money, according to the traffic manager at a Philadelphia firm. "As a result, we never package our shipments, except when they're to go by air – and even then we hire somebody else to do our packaging for us."

However, a lack of packaging actually helps assure a computer shipment safe passage, since "freight handlers tend to treat a computer carefully when they can see what is in; when they can't see what it is, they treat it as just another box," he said.

Computer makers and lessors have tested many transportation arrangements over the years. Due to the need for speed, for example, air shipment occasionally is used.

Repeated Handling

But air shipment, while faster than other modes, involves repeated handling. The shipment must be picked up, moved to an airport, unloaded at a freight dock, moved to a cargo loading area, loaded onto a pallet or cargo container, moved to the aircraft, loaded onto the plane, removed from the plane at the customer's city, moved to a freight dock, unloaded from the pallet or container, and finally loaded onto a truck for delivery to the customer's dock where it is once more unloaded and moved to its final resting place.

Repeated handling obviously invites damage; this, combined with the extremely high rates charged by air carriers for computer equipment and the lack of sufficient security for air cargo at many U.S. and foreign airports, has led most shippers to seek alternate methods.

Rail Transportation

Transportation by rail, unless shipper and receiver are served by the same railroad at not too great a distance, is similarly hazardous. While railroad rates are substantially lower than airline rates for similar commodities, the necessity of repeated handling of the shipment still exists, and the frequency of in-transit damage accordingly is comparable.

Motor carriage of computer equipment offers several advantages, including rates that are generally lower than those of airlines and railroads, and fewer intermediate cargo handlings, especially if the customer and the shipper are not too far apart.

Contract motor carriers or truck line common carriers, however, also offer significant problems to the computer shipper seeking the safest, fastest mode of transport. For example, unless the consignee is located in the same city as the manufacturer, a shipment is normally picked up and moved to a centralized loading dock for subsequent dispatch. Repeated handling of the shipment occurs as a matter of course, and the chance for damage increases correspondingly.

Another Alternative

Within the last few years, a fourth transportation alternative has arisen, involving the use of specially designed and equipped household goods vans for dock-to-dock shipment of computers and accessories. Under this arrangement, in-transit handling of shipments is usually eliminated, since the vans in fact move from shipper to consignee with no intermediate unloading and reloading stops.

While some movers set aside part of their fleets for use solely for the transportation of delicate machinery and items requiring extreme care, such as trade-show exhibits and art collections, not all do. The computer shipper seeking a mover should find out whether the trailer he is to use is used for transporting regular household goods, or is in fact dedicated to moving delicate machinery.

Kuhlman is a marketing specialist for the special products division of Atlas Van Lines, Inc.

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Air Force to Replace 7040

HANSCOM FIELD, Mass. – Plans to acquire replacement electronic data processing equipment for installation at the Air Force Human Resources Laboratory, Brooks Air Force Base, Tex., were announced recently by the Electronic Systems Division of the Air Force Systems Command.

This acquisition will replace the currently installed IBM 7040 system.

Hospital Plans Real-Time Lab System

BIRMINGHAM, England — United Birmingham Hospitals here has ordered a Univac 418-III for early 1972 delivery to its Queen Elizabeth Medical Center.

Forty display terminals and 18 teletypewriter terminals are included in the order. The system will initially be used for patient administration and laboratory reporting systems on a real-time basis.

The first real-time applications will be operational early in 1973, the hospital said. Future application areas will include laboratory requesting, drug prescribing, nursing records and patient history compilation.

Other Orders

J.W. Robinson's Department Stores will install the TRW 4000 point-of-sale credit and check authorization system at its 11 southern California stores. The 4000 system is manufactured by TRW Data Systems.

Temple University is doubling the capacity of its current computer system with the installation of a second Control Data 6400 system. The systems are used for payroll, student records, library accounting, in addition to supporting research and classroom use by faculty and students.

Orders and Installations

Control Data also announced that Statskontoret, the Swedish government purchasing agent, has ordered a CDC 955-1700 document reader-computer system to handle automobile registration and car control information. The $250,000 system will be installed next April.

NCR reports three banks are installing Century systems: The Federal Home Loan Bank of Seattle will use a Century 50 for time deposits accounting; the Pikesville National Bank, Kentucky, has installed a Century 200 as the nucleus of a Central Information File; and the Peru Trust Co., Indiana, will also use its Century 100 to process CIF data.

In addition, NCR said that four city governments have installed Century 100 systems: The Atlanta, Ga., Housing Authority; the City of Chicopee, Mass.; the City of Clearwater, Fla.; and the City of Tuscaloosa, Ala.

An NCR Century 200 has been installed at the Richmond, Fredericksburg & Potomac Railroad. It will be used with 260 data terminals for keeping track of freight shipments.

Colorado State University, Fort Collins, will use a Student Registration and Scheduling system developed by Systems & Computer Technology Corp.

Security Pacific Bank has installed a Computer Output Microfilmer from Pertec Corp. to reduce the bulk of its documentation requirements.

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Disk Makers Report

Calcomp, Telex Revenues Soar, But Telex Net Drops

ANAHEIM, Calif. – Two marketers of disk memory systems have announced increased revenues for recent periods, but while CalComp showed a gain in earnings, Telex was unable to translate the higher revenues into increased income.

The first quarter at CalComp was the largest in the company's history, with a 46% increase in earnings and a 77% increase in revenues in the three month period ended Oct. 3.

Net income for the period was $638,000, equal to 26 cents per share, on total revenues of $13.5 million, the firm said.

This compares with earnings of $436,000, or 19 cents per share, on revenues of $7.6 million in the same period last year.

Restated Results

Results for the first three months last year have been restated, the firm said, to reflect a change in accounting for lease income and related lease acquisition and installation costs, CalComp said.

Net income of $420,000, equal to 18 cents per share, on sales of $8.6 million was previously reported.

At Telex revenues for the six months ended Sept. 30 amounted to $44.2 million, a 33% increase over revenues of $33.1 million for the same period a year ago.

Net income, however, dropped to $2.7 million, equal to 26 cents per share, from the $3.2 million, or 31 cents per share, registered in the corresponding period a year earlier.

The revenue increase was realized even though Telex did not make any peripheral equipment sales to independent leasing companies under new contracts during the second quarter, said President S.J. Jatras.

Now that the situation has been clarified, "it is our opinion that contracts involving the sale of our leased equipment can be negotiated so as to receive the desired accounting treatment and we are proceeding with negotiations with qualified purchasers for such sales in the last half of this fiscal year and the next fiscal year," he added.

"We can make no assurances that we will be able to satisfactorily conclude these negotiations with new contracts," he said.

During the six months ended Sept. 30, Telex actually delivered and installed computer peripheral equipment which had a sales value of $40 million compared with $30 million of such equipment delivered during the same period last year, the firm stated.

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Nickels & Dimes

IBM has done it again – the board of directors has declared a regular quarterly dividend of $1.30 per share on the common stock, payable Dec. 10 to holders of record on Nov. 11

$$$

Boothe Data Systems Inc. has turned around from a loss of $61,461 in the first quarter last year to a profit of $6,291 in the same quarter this year. Revenues increased from $147,971 to $462,225 in the comparable periods.

$$$

Creditors have accepted a plan by Sequential Information Systems Inc. that will allow it to get out of Chapter 11 bankruptcy proceedings, the firm said. The firm noted it had operated profitably since the Chapter 11 petition was filed almost one year ago.

$$$

Operations in the month of September were at the break-even point at Sycor Inc. although the firm reported a loss for the third quarter as a whole of $567,400. Revenues for the quarter were $1.8 million. For the first nine months sales were $5.4 million compared with sales of $1.3 million in the same period last year.

$$$

Operations at The Computer Exchange Inc. were adversely affected by a "general price weakness throughout the computer industry, increased costs for short-term borrowing, and an extended sales hiatus resulting from an evaluation period which followed the introduction of new IBM and RCA computer models," the firm said. It reported a loss of $212,081, or 25 cents per share, on revenues of $5 million for the year.

$$$

In the analog computer field, Electronic Associates' year-to-data operations "continue to be profitable," compared with a loss situation for the firm in the first three quarters of last year. The firm broke even in the third quarter on sales of $7.6 million, compared with a loss of $647,000 before an extraordinary item last year. The extraordinary item made the loss amount to $4.4 million, or $1.72 per share.

$$$

Data 100 Corp. announced its first profit since being founded in 1969. In the quarter ended Sept. 30, profit totaled $256,000, or 16 cents per share, on revenues of $4.6 million, a 940% increase in revenues from the $442,000 registered in the same period last year.

Control Data announces new laser beam optical character reader

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The new Laser Reader processes 1200 documents a minute. It can be equipped for reading any of three different computer fonts. Handles anything from imprinted credit card documents to turnaround billing documents; accommodates sizes up to 4½ by 9 inches.

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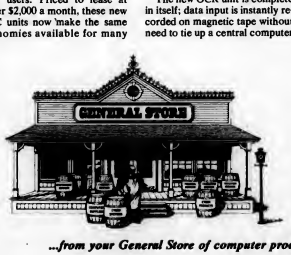

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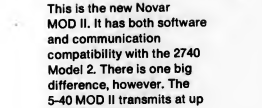

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GTE INFORMATION SYSTEMS

Digital Earnings Slide on Sales Rise, Interdata Sets Records in Both Areas

NEW YORK – Two mini makers have reported quarterly results showing increased revenues.

Although sales rose by more than $4 million at Digital Equipment Corp. in the first quarter of fiscal 1972, the firm experienced a slight erosion in income.

Interdata Inc., on the other hand, reported records in both revenues and net income for the third quarter which ended Sept. 24.

Revenues at DEC in the quarter ended Oct. 2 reached $38.4 million, up from the $34 million registered for the like period a year ago.

Earnings Slip

Earnings slipped however, from $2.95 million, equal to 30 cents a share, a year ago to $2.94 million, or 29 cents per share, this year.

"During the last year," President Kenneth Olsen said, "the market for capital equipment has been slow. But DEC, in showing its confidence in the future . . . was one of the few manufacturers in Massachusetts to continue to expand production facilities."

DEC, he said, had increased employment from 5,700 to 6,800 people during the recession period.

Interdata Up

Interdata reached revenues of $2.6 million compared with $1.7 million for the same period last year.

Income for the quarter reached $108,800, or 6 cents per share, compared with $33,700, equal to 2 cents per share, in the 1970 period.

For the nine months, the firm reported revenues of $6.2 million and a net loss of $2,300, compared with revenues of $4.6 million and net income of $106,000 for the same period last year.

Informatics, ADR Reports Cloud Software Picture

CANOGA PARK, Calif. – The outlook for profitability in the software industry remained cloudy as two of the largest firms, Applied Data Research (ADR) and Informatics, Inc, reported their latest financial figures.

Informatics said figures from the first half of fiscal 1971, ended Sept. 25, showed improvement in income from continuing operations," but overall earnings were cut in half by discontinued operations.

Net earnings for the six month period were $79,000, or 5 cents per share, on revenues of $9.2 million, compared with a restated $166,000, or 11 cents per share, on revenues of $8.8 million in the same period last year.

"The end of the first half marked the last of California data center losses which have adversely affected earnings for the past two and one-half years," noted President Dr. Walter F. Bauer.

Earnings from continuing operations would have been 16 cents per share compared with 14 cents per share earned by the same operations last year, he said.

Extraordinary Item

At Applied Data Research, the third quarter ended Sept. 30 showed a loss of $42,886, equal to 5 cents per share, before an extraordinary item which gave the firm a net profit of $23,433, or 2 cents per share.

In the same period last year the firm showed a loss of $46,524, or 5 cents per share, before extraordinary items which rendered a net profit of $123,740, or 13 cents per share.

Operating revenues were $1.8 million this year, down from $1.9 million in the third quarter a year earlier.

For the nine-month period ADR reported a loss of $406,664, or 42 cents per share, before extraordinary items. The loss was reduced by extraordinary items, giving a net loss for the period of $286,629, or 30 cents per share.

The firm lost $307,806 or 32 cents per share, before extraordinary items and had a net loss of $230,590, equal to 24 cents per share, after those items, in the same nine months last year.

Revenues for the firm's nine months were $5.1 million this year, equal to the $5.1 million chalked up last year.

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TRADE*QUOTES

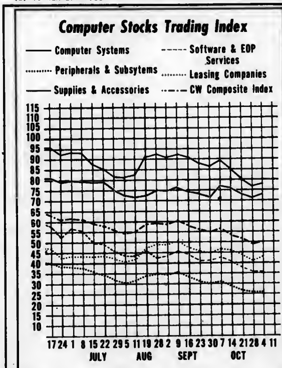
Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES THURSOAY, NOVEMBER 4, 1971

EXCH		1971 RANGE (1)	CLOSE NOV 4 1971	WEEK NET CHNGE	WEEK PCT CHNOE
	SOFTWARE & EOP SERVICES				
O	AOVANCEO COMP TECH	1- 4	1 1/2	- 1/8	-7.6
A	APPLIEO OATA RES.	5- 13	5 1/8	- 1/8	-2.3
O	APPLIEO LOGIC	1- 3	1/4	0	0.0
N	AUTOMATIC OATA PROC	44- 66	61	+ 1/4	+0.4
O	AUTO SCIENCES	1- 8	7/8	- 1/4	-22.2
O	COMPUTER NETWORX	2- 11	6 1/2	0	0.0
O	COMPUTER PROPERTY	5- 11	3 3/4	+ 1/2	+9.5
N	COMPUTER SCIENCES	6- 17	6 7/8	- 1/8	-1.7
O	COMPUTER TECHNOLOGY	5- 11	5 1/8	- 3/8	-6.8
O	COMPUTER USAGE	5- 16	7	+ 1/4	+3.7
O	COMP AUTOMOT REPORTS	6- 13	7 1/2	- 1/8	-1.6
N	COMPUTING & SOFTWARE	19- 45	20 3/4	+ 7/8	+4.4
O	COMRESS	2- 4	1 3/4	+ 1/4	+16.6
O	COMSHARE	4- 8	4 3/8	0	0.0
O	OATA AUTOMATION	1- 4	5/8	0	0.0
O	DATA PACKAGING	6- 10	6 3/4	- 1/8	-1.8
O	OATAMATION SERVICE	1- 3	1/2	0	,0.0
L	OATATAB	4- 10	6 5/8	- 1/4	-3.6
O	EOP RESOURCES	6- 16	6 1/2	+ 1/2	+8.3
A	ELECT COMP PROG	2- 7	2 1/8	- 1/8	-5.5
N	ELECTRONIC OATA SYS.	42- 85	43 3/8	-1 3/8	-3.0
O	INFORMATICS	7- 13	6 7/8	0	0.0
O	I.O.A. OATA CORP	1- 3	1 1/8	- 1/8	-10.0
A	ITEL	7- 23	6 3/4	- 1/4	-3.3
O	XEANE ASSOCIATES	4- 14	5 1/4	0	0.0
O	XEYOATA CORP	3- 14	7 1/4	+1 7/8	+34.8
A	MANAGEMENT OATA	6- 11	5 3/8	- 1/4	-4.2
O	NATIONAL CSS INC	7- 14	8	+ 7/8	+12.2
O	NAT.COMP ANALYSTS	1- 4	1/2	- 1/8	-20.0
P	ON LINE SYSTEMS INC	7- 18	9 1/2	- 1/2	-5.0
N	PLANNING RESEARCH	12- 26	12 1/4	0	0.0
O	PROORAMMING METHOOS	16- 29	19	+3	+18.7
O	PROORAMMING & SYS	1- 4	1 3/8	- 1/8	-8.3
O	SCIENTIFIC COMPUTERS	2- 3	2 1/2	- 1/8	-4.7
O	SIMPLICITY COMPUTER	1- 4	3 7/8	+ 1/8	+3.3
O	SOFTWARE SYSTEMS	1- 3	1 1/8	0	0.0
O	T6S COMPUTER CENTERS	4- 9	5 1/2	0	0.0
O	TOLLEY INTL CORP	3- 8	6 1/4	- 1/8	-1.9
O	TRACOR COMPUTING	2- 3	2	0	0.0
O	TYMSHARE INC	4- 13	8 3/8	- 1/8	-1.4
O	UNITEO OATA CENTER	2- 7	3 3/8	- 1/8	-2.2
N	UNIVERSITY COMPUTING	17- 38	17 1/4	-1 3/8	-8.6
A	URS SYSTEMS	3- 11	3 5/8	- 1/8	-2.1
O	VORTEX CORP	2- 6	6	0	0.0
	PERIPHERALS & SUBSYSTEMS				
N	ADORESSOGRAPH-MULT	24- 48	33	+1 1/2	+4.7
O	ALPHANUMERIC	1- 6	1 3/8	0	0.0
N	AMPEX CORP	14- 23	14 3/4	+ 1/2	+3.3
O	ANDERSON JACOBSON	6- 10	5 3/4	+ 1/4	+4.3
O	ATLANTIC TECHNOLOGY	3- 8	2 3/8	-1 1/8	-30.0
A	BOLT,BERANEK & NEW	3- 8	5	+ 1/8	+2.5
N	BUNKER-RAMO	6- 17	6 3/4	+ 1/2	+8.0
A	CALCOMP	13- 33	17 1/2	+1 3/8	+10.2
O	COGNITRONICS	2- 9	2 1/4	0	0.0
O	COLORADO INSTRUMENTS	2- 8	2	+ 1/4	+14.2
O	COMPUTER COMMUN.	6- 19	6 3/4	+ 1/4	+3.8
A	COMPUTER EQUIPMENT	3- 7	2 7/8	- 1/8	-4.1
A	COMPUTEST	3- 20	4 7/8	- 3/8	-7.1
O	CONSOL COMPUTER LTO.	2- 12	2 1/8	+ 1/4	+13.3
A	DATA PROOUCTS CORP	3- 10	3 1/4	- 3/4	-18.7
O	OATA RECOGNITION	3- 8	4 3/4	- 1/2	-9.5
O	OATA TECHNOLOGY	3- 9	3 3/8	+ 1/8	+3.3
O	OIGITRONICS	2- 8	2 3/8	- 1/8	-4.3
N	ELECTRONIC M & M	6- 16	6 3/4	- 1/4	-3.3
O	FABRI-TEK	2- 4	2 3/8	0	0.0
O	GENERAL COMPUTER SYS	6- 10	6 3/4	-1 1/2	-18.1
N	GENERAL ELECTRIC	53-124	58 5/8	+ 3/8	+0.6
O	INFOREX INC	21- 49	21	+ 1/4	+1.2
O	INFORMATION OISPLAYS	4- 8	4 1/8	- 1/8	-2.9
O	MANAGEMENT ASSIST	1- 2	5/8	0	0.0
A	MARSHALL INOUSTRIES	8- 27	9 3/8	+ 5/8	+6.9
N	MEMOREX	27- 78	27 3/8	-3 3/8	-10.9
A	MILGO ELECTRONICS	12- 26	13 1/8	-2 3/8	-13.3
N	MOHAWK OATA SCI	18- 47	18 7/8	+ 3/8	+3.4
O	OPTICAL SCANNING	7- 18	7 1/8	- 1/2	-6.5
O	PHOTON	6- 12	3 7/8	- 1/4	-4.0
A	POTTER INSTRUMENT	13- 25	14	- 1/4	-1.7
O	PRECISION INST.	7- 16	10	-1	-9.0
O	RECOGNITION EQUIP	11- 26	11	- 5/8	-3.3
O	REOCOR CORP.	1- 9	1 3/4	- 1/8	-6.6
N	SANOERS ASSOCIATES	10- 22	10 1/4	+ 1/4	+2.3
O	SCAN OATA	6- 13	9 5/8	- 1/2	-4.9
O	TALLY CORP.	8- 16	8 3/4	0	0.0
N	TELEX	10- 22	10 3/4	+ 3/4	+7.5
	SUPPLIES & ACCESSORIES				
N	ADAMS-MILLIS CORP	10- 19	10 5/8	0	0.0
O	BALTIMORE BUS FORMS	6- 10	8 3/4	0	0.0
A	BARRY WRIGHT	7- 13	7 1/2	0	0.0
A	OATA OOCUMENTS	14- 29	14 1/4	0	0.0
O	OUPLEX PROOUCTS INC	8- 11	11 1/8	+ 5/8	+5.9
N	ENNIS BUS. FORMS	6- 13	5 7/8	- 1/4	-4.0
O	ORAHAM MAGNETICS	9- 35	19 1/2	+ 1/2	+2.6
O	GRAPHIC CONTROLS	6- 15	11 1/8	+ 7/8	+8.5
N	3M COMPANY	96-126	122	+3 3/8	+2.8
O	MOORE BUS. FORMS	36- 42	36 7/8	+ 1/4	+0.6
N	NASHUA CORP	29- 47	45 1/4	+2 3/8	+3.3
O	REYNOLOS & REYNOLO	37- 63	59 1/2	+2 3/4	+4.8
O	STANOARO REGISTER	13- 23	14 1/2	-1 3/4	-10.7
O	TAB PROOUCTS CO	8- 17	16 1/2	+ 1/2	+3.1
N	UARCO	25- 34	27 1/4	+1 1/8	+4.3
A	WABASH MAGNETICS	5- 10	6 3/4	+ 7/8	+14.8
N	WALLACE BUS FORMS	18- 26	20 3/8	+ 1/4	+1.2
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	105-143	132 1/2	-1 1/8	-0.8
N	COLLINS RAOIO	10- 20	11 3/4	+ 3/4	+6.8
N	CONTROL OATA CORP	38- 83	39 1/8	- 5/8	-1.3
O	OATA GENERAL CORP	19- 63	49	- 1/8	-0.2
O	OIGITAL COMP CONTROL	4- 24	14	-1	-6.6
N	DIGITAL EQUIPMENT	33- 85	70 1/4	+4 1/4	+6.4
N	ELECTRONIC ASSOC.	5- 9	4 3/4	+ 1/8	+2.7
A	ELECTRONIC ENGINEER.	3- 10	7 1/2	- 3/8	-4.7
N	FOXBORO	25- 46	34 1/2	+ 1/2	+1.4
O	GENERAL AUTOMATION	9- 26	11 3/4	+ 1/2	+4.4
N	HEWLETT-PACKARO CO	30- 46	39 3/4	-1 1/4	-3.0
N	HONEYWELL INC	83-113	111	+2 1/2	+2.3
N	IBM	284-364	300 1/4	+2	+0.6
O	INTEROATA INC	6- 11	7 7/8	+ 1/8	+1.6
N	NCR	28- 49	28 1/4	+ 1/4	+0.8
N	RCA	26- 41	33	+1	+3.1
N	RAYTHEON CO	27- 46	34 7/8	+3	+9.4
N	SPERRY RANO	23- 38	24 3/4	+1 1/2	+6.4
A	SYSTEMS ENG. LABS	7- 18	7 3/8	- 5/8	-7.8
N	VARIAN ASSOCIATES	13- 18	13 1/4	-1 3/8	-10.9
N	VICTOR COMPTOMETER	13- 27	13 1/2	0	0.0
N	WANG LABS.	29- 50	33 1/2	+2 3/8	+7.1
N	XEROX CORP	85-121	112 7/8	+4 5/8	+4.2
	LEASING COMPANIES				
A	BOOTHE COMPUTER	11- 27	13 1/4	+1	+8.1
O	BRESNAHAN COMP.	2- 4	1 7/8	- 1/8	-6.2
O	COMPUTER EXCHANGE	2- 9	2 3/8	+ 1/8	+5.3
A	COMPUTER INVSTRS GRP	8- 14	8 1/4	- 1/4	-2.9
N	DATA PROC. F & G	10- 19	11 1/8	+ 3/4	+7.2
O	OATRONIC RENTAL	2- 4	2 5/8	+ 1/8	+5.0
A	OCL INC	3- 13	8	+1 1/2	+23.0
A	OEARBORN-STORM	24- 43	40	0	0.0
A	OPA, INC.	4- 9	8	0	0.0
A	ORANITE MOT	7- 13	8 1/2	+ 1/8	+1.4
A	OREYHOUNO COMPUTER	7- 11	7 3/4	+ 5/8	+8.7
N	LEASCO CORP	16- 26	22	+ 1/8	+0.5
O	LECTRO MOT INC	2- 5	3 3/4	- 1/8	-3.2
O	NCC INOUSTRIES	3- 8	5 7/8	0	0.0
A	ROCKWOOO COMPUTER	4- 9	4	+ 1/2	+14.2
O	SYSTEMS CAPITAL	3- 7	3 7/8	- 7/8	-18.4
N	U.S. LEASINO	16- 39	34 3/8	+ 7/8	+2.6

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANOE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BIO PRICES AS OF 3 P.M. OR LAST BIO
(1) TO NEAREST OOLLAR



Earnings Reports

BURROUGHS
Three Months Ended Sept. 30

	1971	1970
Shr Ernd	$.69	$.67
Revenue	214,764,000	216,825,000
Earnings	12,677,000	11,559,000
9 Mo Shr	2.21	2.14
Revenue	648,661,000	619,594,000
Earnings	40,548,000	36,884,000

ELECTRONIC MEMORIES & MAGNETICS
Three Months Ended Sept. 30

	1971	a1970
bShr Ernd	$.05	.....
Revenue	21,352,000	$21,373,000
Loss Disc Op	133,000	264,000
Tax Cred	231,000	.....
Earnings (Loss)	c716,000	(795,000)
b9 Mo Shr	.16	e
Revenue	62,671,000	64,701,000
Loss Disc Op	127,000	923,000
Tax Cred	1,355,000	.....
Earnings	c2,918,000	772,000

a-Restated. b-Based on income before tax credit. c-Equal to 9 cents a share in the quarter and 42 cents a share in the nine months. e-No common share earnings reported; preferred dividend requirements exceeded net income.

LEASEPAC
Year Ended June 30

	1971	1970
Shr Ernd	$.34	$.27
Revenue	1,291,663	761,501
Earnings	176,661	143,639

HONEYWELL
Three Months Ended Sept. 30

	1971 (000)	a1970 (000)
bShr Ernd	$.86	$.46
Revenue	476,580	459,632
Tax Cred	1,372	548
cEarnings	16,520	8,581
b9 Mo Shr	1.74	2.14
Revenue	1,367,316	1,410,053
Tax Cred	2,253	548
cEarnings	32,667	37,314

a—Restated to reflect merger of General Electric's computer business into Honeywell. b—Based on income before tax credits. c—Equal to 94 cents a share in the quarter and $1.87 a share in the nine months of 1971, compared with 49 cents a share and $2.17 a share, respectively, in the like periods of 1970.

SIMPLICITY COMPUTER
Nine Months Ended July 31

	1971	1970
Shr Ernd	$.18	a$.10
Revenue	1,526,366	515,203
Earnings	92,297	a49,657

a—Before prior year tax credit.

TECHNALYSIS
Six Months Ended June 30

	1971	1970
Revenue	$340,420	$309,147
Earnings (Loss)	1,047	(16,247)

ITEL
Three Months Ended Sept. 30

	1971	a1970
Shr Ernd	$.01	b$.33
Revenue	27,580,000	25,414,000
Spec Cred	.....	392,000
Earnings	77,000	c2,711,000
9 Mo Shr	.46	b.46
Revenue	86,375,000	59,497,000
Spec Cred	.....	392,000
Earnings	3,280,000	c3,600,000

a-Restated to reflect acquisition of ISS on a pooling-of-interests basis. b-Based on income before special credit. c-Equal to 39 cents a share in the quarter and 52 cents a share in the nine months.

TRILOG ASSOCIATES
Year Ended July 31

	1971	1970
Shr Ernd (Loss)	a$.83	$(2.20)
Revenue	2,327,572	2,092,686
bSpec Cred	40,000	.....
Earnings (Loss)	c133,949	(249,462)

a-Based on income before special credit. b-From operating loss carryforward. c-Equal to $1.18 per share.

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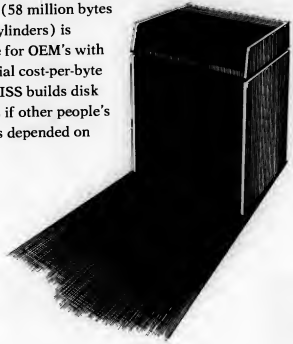
About Promises and Claims

A promise can be grounds for hope and expectation, or a promise can be a binding pledge of performance. There is a great measure of the former today and all too little of the latter. This is why OEM companies are so very careful in evaluating and selecting their suppliers. They know that overstatements and faulty claims about any part of their system will lower customer confidence. Which helps explain why you can count on a company that always exacts the pledge of performance from its suppliers.

Information Storage Systems is an OEM supplier with an unsurpassed record for delivering reliable disk drives that are compatible with most mainframe requirements. The 714 is setting new standards of performance for 11-high disk pack drives in thousands of installations. Now the 715, with double the storage capacity (58 million bytes on 400 cylinders) is available for OEM's with substantial cost-per-byte savings. ISS builds disk drives as if other people's promises depended on them.



ITEL CORPORATION
Information Storage Systems

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